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Application of Standard Costs

Practical Example of Use of Standard Burden for Each Department—Instances of Specific Savings

NO phase of cost accounting has interested executives and accountants more than the application of burden to cost. The use of a standard burden, which may be recognized as an old friend or enemy formerly called overhead or general expense, has done much to take the guesswork out of this part of cost accounting. In fact, the distribution of overhead through the employment of a standard burden is the best means of including this item of expense in costs, because it affords a practical means of figuring this factor and because its function is to serve as a check by the management on the operation of the plant.

In providing a standard burden for its plant, the Cincinnati Milling Machine Co. first considered the normal number of hours which its departments were running. A study of past performance and a desire to attain certain standards gave this figure. Then the allowable expense for fixed charges, indirect labor,

supplies, power, etc., was established. The total amount of the standard expense, divided by the standard hours for a particular department, produced a standard burden rate for the department or for a group of machines in that department. The usual journal entries covering the allocation of service department costs to production centers were made, and the standard burden was completed.

The next step was that of compiling actual expenses in comparison with the elements of expense in departments created in the standard burden. The difference between the standard burden and the actual expense gave the over-or-under earned burden. To determine the cost of a part, it suffices to find the number of hours the part has been in operation in each department, multiply that by the respective standard burden rates, and add material and labor costs incurred.

There were two objects in establishing a standard



Timekeeper's Desk in the Milling Department of the Cincinnati Milling Machine Co. The green light has just flashed, the foreman has arrived to find out why; result—matters are straightened out at once and idle machine time has been reduced

burden system. The first was to supply a means of applying burden equitably to the product manufactured. This was accomplished by doing away with the old method of having a flat rate for the entire shop, this being replaced by a standard burden system that gave an actual cost of the product. For example, it was obvious that a part or a casting requiring the use of a large planer valued at \$20,000, with an attendant large expense in power and tools, should assume a higher rate per hour than a part handled on a small machine, worth perhaps \$1,500.

The second object was to supply the management with a summary of the operations of the plant. The budget is tied in with this report, a copy of which is shown in the accompanying illustration. The first column gives the department number and name. The next column, marked "budget," is the amount set up in the budget as available for that month. Here it is necessary to digress for a moment to explain that the budget is based on the figures in the burden plan. It is interesting to note that the figures in the standard burden system for the elements of expense were so nearly correct that they were used as a basis for setting the following year's budget.

In the column marked "actual" expense the recorded expenses incurred by each department are entered. The variance column represents the difference between the budget and the actual expenses. The next two columns are self-explanatory, while the last shows the difference between the standard allowed and the actual expenses. This particular example reveals an over-earned burden, because of the fact that production was above normal and shop executives and foremen were keeping a tight rein on expenses.

How the System Has Checked Expenditures

Establishment of standard burden and budget systems has resulted in greater responsibility on the part of department heads and foremen. During the first year much time was spent in selling the idea to these men as a means of increasing efficiency. Each department head must know what each cost factor is and how much he can spend to carry on the work of his division at a minimum expense. The case of Tom Smith in the lathe department constitutes an example of what has been done. He wanted to know why his repair charges were so much higher than the average.

He had been told to watch his expenses closely and to cut them down wherever possible. Not knowing actual costs, he ordered a pump repaired for a machine. The bill was \$65, whereas a new pump of a similar kind could have been bought for \$18.

Four departments using the services of the blue-print department complained because their blue-printing costs seemed excessive. The suggestion was made that they eliminate some of the work which was not essential. The department executives were unable to agree as individuals, but when called together in a general meeting they were forced to meet the issue squarely. The result was a saving of \$2,400 annually in the expense of the blue-print department.

A certain department head was advised to check over his expenses, particularly the cost of clerk hire. His reply was, "My department is operating cheaply, and while those clerks over there are doing some work for me, they should be charged to Crockett's department." Upon being told that the clerks would be charged against his expenses, Crockett decided to dispense with them. This change alone netted a saving of \$2,600 a year. In addition, the work was performed more efficiently by others and the supervisor was relieved of considerable care.

Inspection of Purchase Orders

All purchases of material, the payroll and purchases of expense items pass across the desk of the cost accountant for approval regarding the account of the department against which the cost is to be charged. This plan has been of benefit in two ways. It produces a uniformity in the allocation of charges to various departments or stores accounts. Furthermore, the fact that each item or purchase is being inspected, both as to its cost and as to its use, causes the originator to give some thought to the purchase he is making. The management has given the cost accountant the right to question any purchase or expenditure that appears to be unreasonable or excessive in price or quantity, and when necessary either an oral or a written reply must be given to him.

For all non-productive labor, with idle time included, the company uses a green Hollerith tabulating machine card. Idle time appears as a charge against the department incurring the expense. Naturally, the foremen do not like to have it shown on their burden

Statement of Budget and Actual Hours and Expenses and Burden Report for the Month of June

Centers	Expenses			Hours		Standard Variances
	Budget	Actual	Variance	Budget	Actual	
3 Scraping	\$4,792.00	\$3,217.89	\$1,574.11	5,843.0	7,168.0	\$167.30
4 Polishing	2,739.00	2,198.48	540.52	3,942.0	4,440.0	54.18
5 Lathe	2,862.00	3,086.82	224.82	2,771.0	2,376.0	1,317.23
6 Milling	9,403.00	8,733.94	669.06	.....	.....	5,771.82
7 Hardening Room	2,691.00	1,997.86	693.14	3,219.0	4,706.0	1,055.22
8 Gear Cutting	819.00	644.89	174.11	749.0	1,278.0	482.71
9 Screw Machine	4,860.00	5,425.09	565.09	4,944.0	4,323.0	742.09
10 Casting Handling	12,134.00	12,143.71	9.71	7,337.0	7,260.0	5,220.61
11 Steel Handling	4,723.00	4,706.60	16.40	3,819.0	3,234.0	713.33
12 Grinder Assembly	4,033.00	3,326.78	706.22	.....	.....	2,667.54
14 Drilling	5,325.00	4,289.06	1,035.94	3,600.0	5,187.0	2,129.82
15 Stock Room	10,422.00	11,550.77	1,128.77	6,741.0	4,399.0	700.34
16 Planing	4,067.00	3,270.47	796.53	4,416.0	3,674.0	783.14
17 Boring	9,569.00	11,150.41	1,581.41	4,944.0	5,162.0	605.64
18 Dividing Head	8,096.00	10,164.05	2,068.05	5,843.0	2,782.0	117.48
19 Vise	9,537.00	8,253.22	1,283.78	4,058.0	4,330.0	2,644.30
20 Machine Assembly	6,416.00	8,119.02	1,703.02	.....	.....	1,667.97
29 Painting	2,999.00	3,246.60	247.60	1,795.0	1,576.0	1,424.74
33 Spindle	3,453.00	4,560.61	1,107.61	.....	.....	1,258.30
43 Grinding	1,928.00	2,041.02	113.02	1,795.0	1,044.0	407.98
Total	\$110,868.00	\$112,127.29	\$1,259.29	65,816.0	62,939.0	\$25,544.88
Service Centers Burden Variance .....	.....	1,697.64	1,697.64	.....	.....	1,697.64
Main Shop .....	.....	\$110,429.65	\$438.35	.....	.....	\$27,242.52
Mfg. Burden Variance .....	.....	129.36	129.36	16,154.0	16,065.0	129.36
Engineering Burden Variance	\$110,868.00	\$110,300.29	\$567.71	81,970.0	79,004.0	\$27,371.88
Class A Expenses	18,320.00	21,532.47	3,212.47	.....	.....	3,058.59
Class B Expenses	36,457.00	37,407.19	950.19	.....	.....	.....
Grand Total	\$165,645.00	\$166,181.36	\$536.36	81,970.0	79,004.0	\$30,430.47

and budget reports. The charges usually are the result of a producer waiting for material, for an electrician, for the foreman or for tools. To eliminate such waste a green light has been installed about 5 ft. above the time-keeper's desk. Whenever a producer rings in on an idle time ticket, the green light is turned on. It is visible for several hundred feet through the department. The foreman, superintendent, or any executive passing by and noting the green light generally stops, ascertains the cause and takes steps to

correct the fault. By the employment of this measure idle time in the plant has been decreased approximately 80 per cent.

Each month the superintendent of each department and his foremen receive a report showing the burden and budget allowed and the actual expenses. The cost department has a busy time explaining to Bill Smith or Henry Jones why he was charged with so many supplies, or the reason for his indirect labor expense being higher than the standard.

All Chromium Used in America Is Imported

Ores Mined in Rhodesia and New Caledonia by French and American
as Well as British Interests

CHROMIUM industry is rapidly expanding, according to J. W. Furness, in information circular No. 6038 of the Bureau of Mines. The United States uses 60 per cent of the world production, although no high grade ore is mined here. About equal proportions of it go into the manufacture of ferrochrome, chemicals, and refractory brick.

U. S. Production and Imports of Chromium Ore		
Year	Production	Imports
1909.....	598 tons	39,624 tons
1925.....	108 tons	149,739 tons
1926.....	None	215,464 tons

Ferrochrome is an alloy of chromium, iron, and carbon; to be acceptable to the trade it must contain not less than 60 per cent of chromium. Ferrochrome is made by reducing the crude ore or concentrate in the electric furnace. The alloy tends to take up much carbon, and as carbon is considered undesirable, the quality and price are in inverse proportions to the carbon content. At present the commercial manufacture of ferrochrome involves the use of carbon, and no equally satisfactory method of manufacture without carbon is known. The electric furnace is charged with chromite and anthracite. True reduction, which begins at 1185 deg. C., is based on the reaction $\text{FeO} \cdot \text{Cr}_2\text{O}_3 + 4\text{C} = \text{Fe} + 2\text{Cr} + 4\text{CO}$. In practice, however, the amount of carbon necessary greatly exceeds the theoretical requirements. In order to decarburize the high-carbon ferrochrome, the alloy is melted with chromite ore, fluorspar, and a slag containing a high percentage of lime.

Chromium is used in many alloys. Up to 2 per cent, with or without some nickel, it produces a useful shock resisting and durable steel for tools, gears, and ordnance. Rustless steels and iron contain 13 to 14 per cent Cr. Stellite is essentially cobalt, chromium and tungsten. Nichrome (approximately 60 per cent Ni, 14 per cent Cr, and 15 per cent Fe) is a high-temperature resisting alloy, used for resistors for many electrically heated units. Chromium plating is also attracting much attention.

Rhodesian Mines Have Large Reserves

At present the world's supply of chromite is drawn mainly from two great sources, Southern Rhodesia and New Caledonia. The reserves of Rhodesia seem ample to supply the world's present needs for many years. They are probably of greater commercial importance and are more extensive than any other now known. In 1911, the Chrome Co., Ltd., London, was formed, and through an agreement with the owners of the deposits then worked in Rhodesia, was able to dominate the world's market. To the end of 1925 Rhodesia had produced 750,000 tons. The known reserves are estimated to be 2,000,000 tons of 50 per cent ore, in addition to a very large amount of concentrating ore, but the indications are that the potential reserve of high-grade ore is larger than estimated.

In New Caledonia very large bodies of ore suitable for concentration are undeveloped, but in time will be mined. The total production to the end of 1925 has been 885,000 tons. The reserves, not considering the alluvial chromite or the concentratable rock, are es-

timated to be more than 1,500,000 tons of 50 per cent ore.

Since 1922 the development of chromite mining in Rhodesia and New Caledonia has expanded rapidly, and the control of the chromite supplies, which had been in the hands of the Chrome Co., Ltd., has been considerably weakened. There are now many independent shippers, the most important being controlled by French and American citizens.

No High-Grade Ore Mined in America

Consumption and production of chromite in the United States clearly illustrate how an industry of considerable magnitude may depend entirely upon uncontrolled sources for its raw material. In 1827 the Reed mine at Jarrettsville, Hartford County, Md., was developed by Isaac Tyson, of Baltimore, and from it was mined the first chromite produced in the United States. From that date to and including 1925, the total production in the United States of ore containing more than 30 per cent Cr_2O_3 was 577,404 tons. Of this production 137,589 tons was mined during the war period of 1917 and 1918. For the year 1926 the imports of standard grade ore (ore carrying 48 per cent or more Cr_2O_3) amounted to 215,565 tons. In other words, the gross production from domestic mines during a century of operation is equivalent to less than three years' supply as measured by the present rate of imports.

Investigations of domestic chromite deposits carried on during the war indicated that the United States possesses large reserves of low-grade, high-cost chromite which would be sufficient to meet domestic needs for six or seven years at the present rate of consumption; though a lowering of standard grades and a rise in price would both be necessary to bring about the mining of such reserves. In fact, if the domestic reserves were to be measured by present trade standards as to either analysis or price, the United States would be without chromite. The grade of the crude ore shipped during the time of forced production, 1917 and 1918, was 41 per cent, whereas present specifications call for an ore running 45 per cent Cr_2O_3 as a minimum. The price quoted by THE IRON AGE, July 7, 1927, was \$22.50 per gross ton for Indian ore carrying 48 per cent Cr_2O_3 , c.i.f. Atlantic Seaboard. At an average of \$48 (war dollars) per ton, some 80,000 tons were produced in 1918. Production of a like quantity again would require higher prices. However, any statement of the probable relation of price to output must be largely a matter of individual opinion. The accompanying table gives Mr. Furness's opinion as to the production from the reserves in the United States, if prices were to advance as indicated.

Period	Price per Ton (a) in Pre-War Dollars	Total Successive Tonnage for Three-Year Period
First 3 years.....	40	320,000
Second 3 years.....	50	300,000
Third 3 years.....	60	200,000
Fourth 3 years.....	70	300,000 (b)

(a) It is assumed that the present dollar has a pre-war value of 60 cents.

(b) The rise is due to attainment of full capacity by concentrating plants.

New Gas Washer for Ohio Furnace

Large Stack Recently Completed by Wheeling Steel Corporation at Steubenville—Electric Bell Hoists Used

MARKING another step in the progress of its work in balancing and modernizing its plants for greater efficiency, the Wheeling Steel Corporation, recently completed and placed in operation its new No. 2 blast furnace at the Steubenville, Ohio, works. The new stack is equipped with the most modern and efficient labor-saving devices and in productive capacity is equal to any of the larger blast furnaces of today.

The furnace is located on the site formerly occupied by a smaller stack which was dismantled and scrapped. Originally built in 1903, the old furnace was 90 ft. in height and its diameter was 20 ft. at the bosh and 16 ft. at the hearth. All the existing plant units which were unsuitable or lacking in capacity for operation in conjunction with the larger stack were modernized or replaced. The improvements include gas cleaning equipment of a new type, the installation of an electrically operated skip hoist, electric bell hoists of improved design, dust catcher, gas mains, cast house, remodelling of bins and new scale cars. The furnace is 92 ft. in height, the diameter of the hearth is 21 ft. 6 in., the diameter of the bosh 25 ft., the bosh angle 80 deg. 4 min. 25 sec., and the diameter at the stock line 17 ft. 6 in.

There are 16 tuyeres fitted, and the copper cool-

ing plates go as high as the mantle. A Brosius automatic mud gun was installed for plugging the iron notch. Eight cast iron columns support the furnace stack, the shell of which is of 1-in., 7/8-in. and 3/4-in. plate. The furnace top equipment includes a steel plate gas seal, a McKee revolving distributor with self-contained worm and gear drive and automatic gage rod. A 30-ton trolley is provided for raising and lowering the large bell and hopper.

Rigidly keyed to its rod, the large bell is 13 ft. 4 in. in diameter. The small bell, 5 ft. 6 in. in diameter, is suspended from a rod made of double extra heavy steel pipe with removable wearing rings.

Electric Hoists For Both Bells

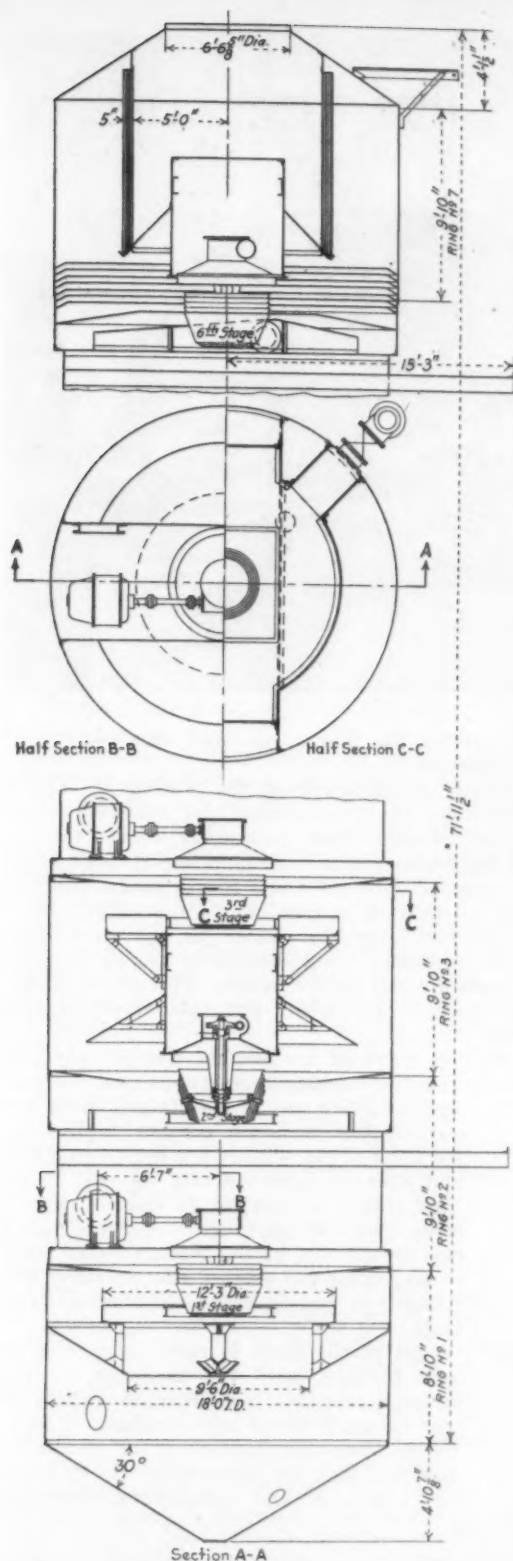
Bells are lowered and raised by two electrically operated bell hoists of the Morrison type. Each hoist is equipped with an equalizer, to which the main operating cable, leading from the end of the bell beam, is attached. Extending from the equalizer two ropes are carried to pins on the ends of levers fulcrumed on either side of a large gear, but connected to the gear through a spring barrel trunnion, the spring being compressed when the bell is seated. When the hoist starts operating, the gear makes approximately one



General View of the New Furnace from Stock Bin Side, Showing Small Clearance Between the Ore Bridge and the Skip Hoist



Top Hamper of the New Stack. Low-type baffled downcomers are used. Bells are lowered and raised by two hoists



(At Left) Sections Vertically and Horizontally Through the New-Type Gas Washer, Showing Its Duplicated Members, Each Separately Motor Operated

(At Right) New Type of McKee Six-Stage Gas Washer. Each stage is a separate unit, all being housed in a cylindrical shell 72 ft. high and 18 ft. in diameter



In the stock house, two additional ore bins were provided and the existing bins were equipped with new bottoms. For weighing the ore and stone and transferring these materials from the bins to the skip pit a new 300 cu. ft. larry car was supplied. The car is of the double-hopper type, electrically operated, and is equipped with air operated gates, brakes and dial scale.

Details of Gas Washer

DESIGNED by Arthur G. McKee & Co., the gas washer consists of a cylindrical steel shell 72 ft. high and 18 ft. in diameter, divided into six compartments or stages. Each stage comprises a complete separate gas washer equipped with individual rotor unit and drive mechanism. The drive consists of a 20 h.p. motor connected through a flexible coupling and shaft to a worm and gear, which drives the main shaft of the motor. This drive mechanism is located in a tunnel, isolating it from the washing compartment proper, and making the drive readily accessible for inspection and oiling. The main rotor shaft extends through a housing casting into the lower portion of the compartment, and at the lower end of this shaft is attached a multiple cone rotor which hangs over and into a circular steel pan.

The rotor pumps water from this supply pan and diffuses it into a dense, fine spray. To insure against the formation of mist, louvers are provided around the inside of the washer shell, to prevent splash from the impingement of water against the shell.

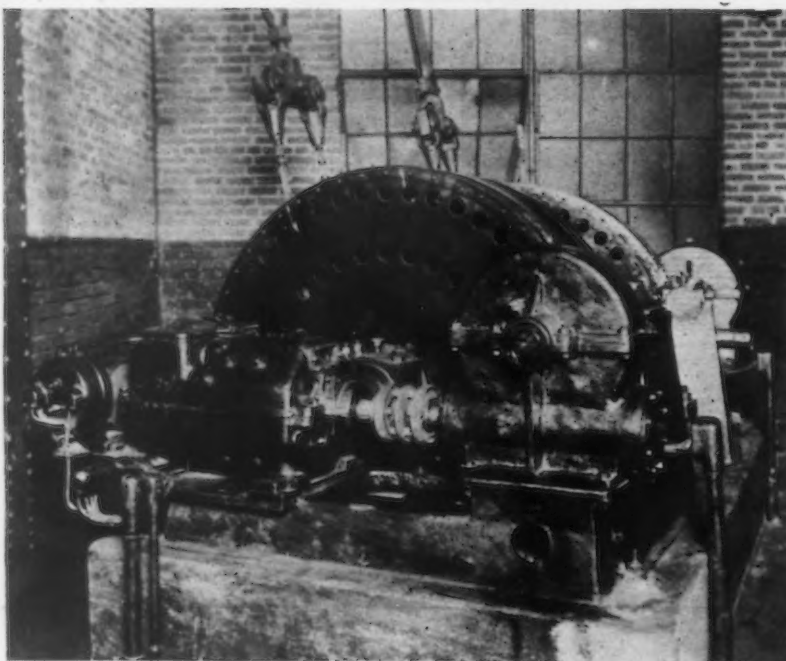
Gas is admitted to the washer just above the water-line of the bottom compartment and passes upward through the spray of each successive stage. Baffle plates are provided throughout the interior of the washer to govern the flow of the gas and to distribute it so as to get the maximum efficiency from the various sprays. A curtain wall, made up of a series of vertical channels, is installed in the top cone of the washer,

revolution, the bell lowers and raises, and when the spring has been compressed sufficiently to give the desired sealing pressure between the bell and hopper, a limit switch stops the motor and sets the brake. The bell hoists require little power, as the motor is overhauled when the bell is lowered by the burden and the unbalanced weight of the bell.

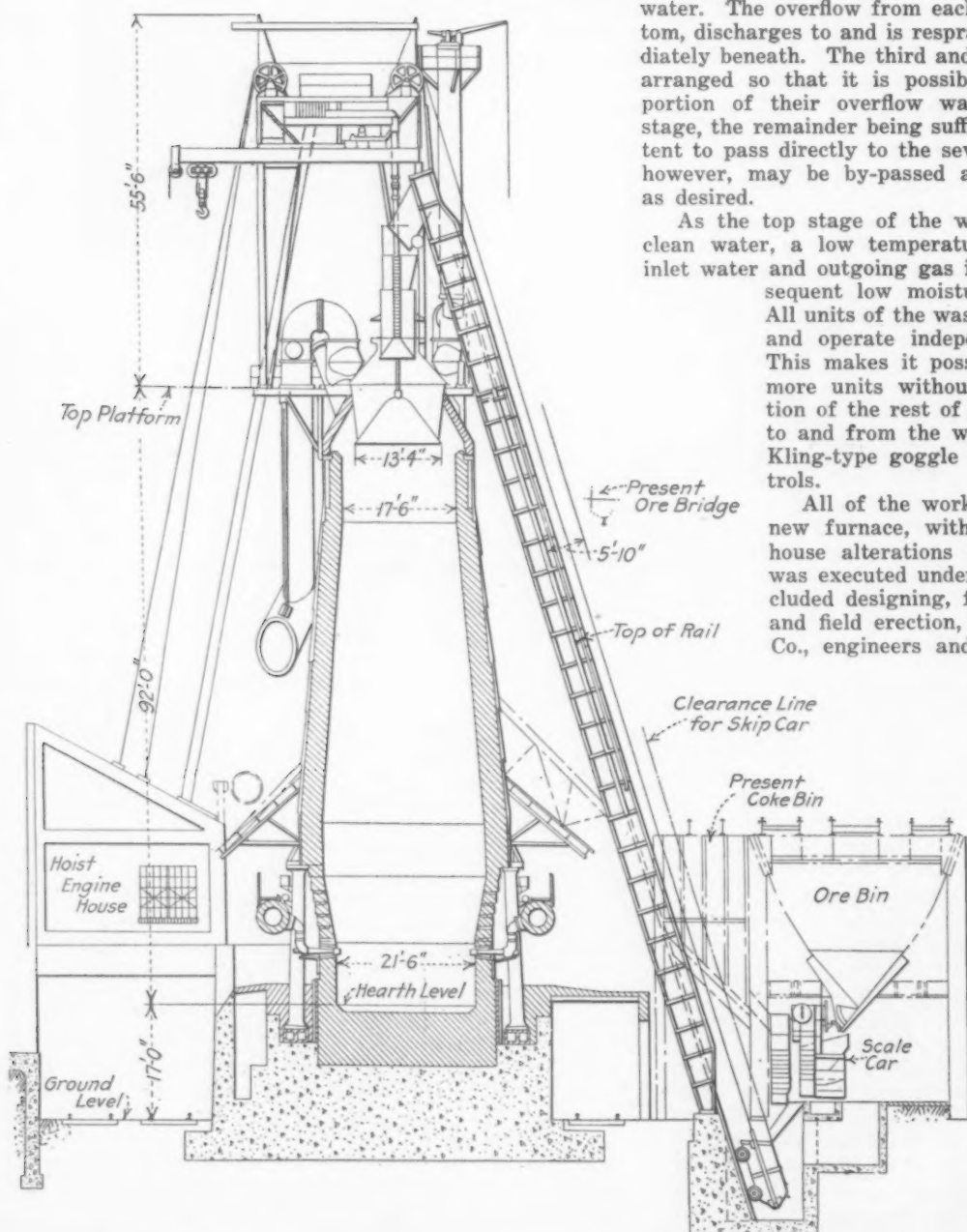
The furnace is also equipped with a Berg-Proudfoot gage rod, which operates automatically at desired intervals, through a motor and hoist. The height of the stock is indicated after each test and all tests are permanently recorded on a Bristol chart recorder.

For charging the furnace, an Otis electric hoist and two 160 cu. ft. skip cars were provided. The cars are equipped with roller bearings and manganese steel wheels and are lined with high-carbon steel wearing plates. The double-track skip bridge, of the plate girder type, is supported from the furnace top platform. Deck plates the entire length of the bridge prevent material from falling through.

(At Right) Morrison Bell Hoists of Improved Design, One for Each Bell. As the lowering bell overhauls the motor, little power is demanded



(Below) Section Through the New Steubenville Furnace, Showing Hoist Arrangement, Sharp Skip Angle and Narrow Skip Clearance with Ore Bridge



to baffle further the flow of gas and thus remove entrained moisture.

The water requirement of the washer is kept to a minimum by the arrangement for recirculation of water. The overflow from each stage, except the bottom, discharges to and is resprayed in the stage immediately beneath. The third and fourth stages are both arranged so that it is possible to discharge only a portion of their overflow water to the next lower stage, the remainder being sufficiently low in dust content to pass directly to the sewer. The sewer outlets, however, may be by-passed and the water adjusted as desired.

As the top stage of the washer pumps only cool, clean water, a low temperature differential between inlet water and outgoing gas is maintained, with consequent low moisture content in the gas. All units of the washer are interchangeable, and operate independently of each other. This makes it possible to shut off one or more units without disturbing the operation of the rest of the washer. Gas mains to and from the washer are provided with Kling-type goggle valves with remote controls.

All of the work in connection with the new furnace, with the exception of cast house alterations and furnace brickwork, was executed under one contract. This included designing, furnishing of equipment, and field erection, by Arthur G. McKee & Co., engineers and contractors, Cleveland.

The Furnace is 92 ft. in Height. The bosh is 25 ft. in diameter and the bosh angle is 80 deg., 4 min., 25 sec. The diameter at the stock line is 17 ft. 6 in.

Better Study of Soft Metals

New Way to Prepare Specimens for Microscopic Analysis

—How the Microtome Cuts Such Alloys and the Structures Which Result

BY F. F. LUCAS

PREPARING soft metals for microscopic examination has been a difficult task because of the ease with which these metals are deeply scratched by the abrasives. Lead and lead cable sheath alloys have been exceedingly difficult to study microscopically. Various investigators have described in the literature the methods which they have used in their work, and references are found describing different polishing techniques, cutting methods, and some unusual procedures, such as flattening lead specimens against a glass plate. The polishing methods all seem to rely on subsequent deep etching to remove the scratches left by the abrasives.

The cutting methods did not appear to offer marked advantages over the polishing methods because the cutting knife left even deeper scratches, seemingly, than the polishing methods. Methods which called for working or distorting the specimen were not of particular interest in most cases because of changes produced in the structure of the specimen.

Very briefly this recites the state of affairs as we found it in 1923. We wished to learn more about the structures of lead cable sheath alloys and how the structures change under the influence of mechanical and thermal conditions such as are encountered in service.

Polishing Technique Improved

It became apparent that the most hopeful ways of attacking the problem would be to improve polishing or cutting techniques. Polishing methods had been in use for years and, while some improvements were secured in our experimental work, the actual gain was not very substantial. By careful and painstaking methods we found it was possible to polish the usual lead-antimony cable sheath alloy (99 per cent Pb—1 per cent. Sb) so that, by deeply etching the specimen for about 12 min. in hydrochloric acid, cleaning in nitric acid, and rinsing in tap water, we were able to photograph the structures successfully. Low magnifications revealed dark polyhedral grains with widened grain boundaries which were white. At high powers the widened grain boundary areas contained curious etching figures which were large and prominent at the grain boundary but gradually receded and disappeared entirely beyond the widened grain boundary areas. It appeared quite likely that some progressive change in structure was taking place from the grain boundaries and that regranulation had occurred in the widened grain boundary areas.

Better Preparation Needed to Resolve Structures

These results indicated the need of some improved means for preparing soft specimens of this kind for metallographic examination. Polishing methods of the kind used were unsatisfactory because one must resort to deep etching to get below the polishing imperfections. Laboratory experiments had shown that no improvements, seemingly, were to be secured by using very fine abrasives. In fact poorer results were secured when the specimen was finished with very fine abrasives than when the polishing was completed on a broadcloth lap charged with No. 65-F alundum.

The problem, then, resolved itself into one of avoid-

ing all but very fine scratches. It was desirable to avoid embedding fine abrasives in the surface of the metal. Since the polishing operation also caused the surface of the specimen to blacken, it was thought that some means should be employed which would prevent oxidation.

The first departure from the established practice was to substitute oils and waxes as the vehicle for carrying abrasives, instead of water which is commonly used. These methods appeared to offer little hope of improvement in results and were finally abandoned.

The cutting method was again revived, although previously it too had been abandoned in favor of conventional polishing methods. In our early work with cutting methods we found the knife left deep scratches in the specimens, and that it seriously cold-worked the cut surfaces.

The Microtome Investigated

The sliding types of microtomes such as are used in biological work were of little value because they lacked rigidity and the knife deflected or "jumped," thus giving an uneven surface. What was needed was an exceedingly solid and rigid microtome with a very heavy knife which had sufficient body to withstand deflection.

A Jung type K wood-sectioning microtome had been used successfully for wood sectioning, but in our earlier work it produced deep scratches and cold-worked the metal to appreciable depth below the surface of the specimen. The service seemed to demand a fine chisel edge rather than an edge such as is usually associated with razors.

Further laboratory experiments demonstrated that we could hone an edge which would not turn over or chip and which would be practically free from all except the very finest imperfections.

Jung Wood-Sectioning Microtome Applied to Metals

We have found that when the Jung microtome will successfully cut sections 2 microns in thickness, the surface of the specimen will be satisfactory for metallographic examination. The sections cut by the microtome are not used in the subsequent metallographic study. The block or specimen from which the sections have been cut is removed from the microtome and the cut surface etched.

[The method of etching and its advantages are here discussed. A description of the microtome is then given in full.]

Metals That Have Been Successfully Cut

The writer has successfully cut specimens of lead and various lead alloys, tin, platinum, gold, silver. Aluminum, aluminum alloys, copper, zinc, the brasses and the bronzes are a little too hard to cut successfully with the standard knife. It appears that a modification in the knife construction will be required to handle these metals successfully without subsequent final polishing. However, they may be roughly prepared by the sectioning method, then given a final polish on a magnesium oxide lap, thus considerably expediting the usual procedure of preparation.

Application of Method

A number [14 in all] of illustrations of structures secured by the sectioning method are given. [A few of these are reproduced.]

This paper describes a sectioning method for pre-

Brief abstract of a paper, "Application of Microtome Methods to the Preparation of Soft Metals for Microscopic Examination," presented at the annual meeting of the American Institute of Mining and Metallurgical Engineers. The author is with the Bell Telephone Laboratories, Inc., New York.

paring soft metals for microscopic examination and illustrates its application.

Conclusions

The microtome method of sectioning can be applied successfully to the preparation of soft metals for microscopic examination. A very substantial and rigid microtome is required. The knife must be honed and stropped so that the cutting edge will be as free as possible from serrations, feather edge, etc. If the knife will cut sections 2 microns in thickness the metal sur-

face will etch satisfactorily. The etch must be deep enough to remove surface cold working; otherwise erroneous conclusions may be drawn.

The phenomena of widened grain boundary areas and aging out of antimony were not fully revealed and understood until the present method for preparing specimens was developed.

The method may be applied successfully to soft metals generally but sometimes a final polish on magnesium oxide laps is beneficial. Development of suitable knives gives promise of overcoming this difficulty.

Reasons for Washing of Coking Coal

Reduction of Ash and Sulphur Stressed—Indirect Benefits of High Value

ADVANTAGES of washed coal for making coke for metallurgical use were brought out in some detail in a paper read at the spring meeting of the Eastern States Blast Furnace and Coke Oven Association, at Pittsburgh, by J. R. Campbell, American Rheolaveur Corporation, 120 Broadway, New York. Much of the paper was devoted to details of the operation and of analyses of the product. He took up both wet washing and dry cleansing systems, the latter being particularly adaptable for large sizes—above 3½ in. One of the principal requirements of the wet washing system is for adequate drying of the washed coal. The moisture content should be not over 5 or 6 per cent.

Reduction of ash and sulphur in metallurgical coal is the immediate effect of coal washing. This has been translated into dollars by blast furnace men. A value of 10c. to 25c. per ton of pig iron has been placed on each 1 per cent reduction in the coke. One company which paid a premium of 75c. per ton on coke with 3 per cent ash regarded the figure too high for the savings effected.

Better Physical Structure

Another effect of washing coal for coking purposes is in the improved physical structure of the coke. The cross fraction caused by pieces of slate is eliminated. The general cell structure is improved and blockier coke is produced. Even fine grinding, where intimate mixtures are made, does not eliminate slate trouble, for the slate becomes segregated in the coking mass and impairs the structure just as surely as the larger pieces.

Some of the points brought out in the discussion of the paper were informing. C. A. Meissner, chairman coke, blast furnace and open-hearth committees United States Steel Corporation, said that the time is coming when uniformity of coals for coking purposes will be an absolute necessity. Need for the larger sizes of coal for other purposes will make it essential that good coke should be made from slack, uniformity in which is possibly only through cleaning. Whether the cleaning should be by the wet or dry process, he said, was subject to local considerations.

Urges Reduction in Costs

Carl A. Wendell, inventor of the Wendell dryer, observed that the cleaning of coal for metallurgical purposes is primarily a commercial proposition and that freight rates determine whether local coal will be used and washed, until such time as high-class coal is gone. One per cent less of ash in the coke reduces the cost of pig iron produced 20c. a ton, he said. While it is true that the modern blast furnaces have much less trouble with high-ash coke than did the old types, and the blast furnace operator for that reason is disposed to overlook the added cost, it is a fact that the extra ash must be melted and fluxed. This means a loss of heat, regardless of how evenly the furnace runs.

He urged that blast furnace operators materially reduce their costs through lessened coke consumption by use of a low-ash coke with even ash content of uniform size, hardness and porosity. Each per cent of ash removed from average bituminous coal adds 216 B.t.u. to the coal value.

In summarizing the gains to be had by means of washing over the cost of washing, he pointed out that, at the coke oven, more coal would be carried on the railroad for the same money; more coal into the coke oven; better yield of by-products (higher coal volume); less danger of fire in the storage pile; less work on the crushers; no Bradford breaker and the disposal of breaker refuse, while at the blast furnace, more burden was possible on the same coke volume; less air and pressure; less coke dust, which means less flue dust; faster and more even driving; less slag volume and better iron and more of it.

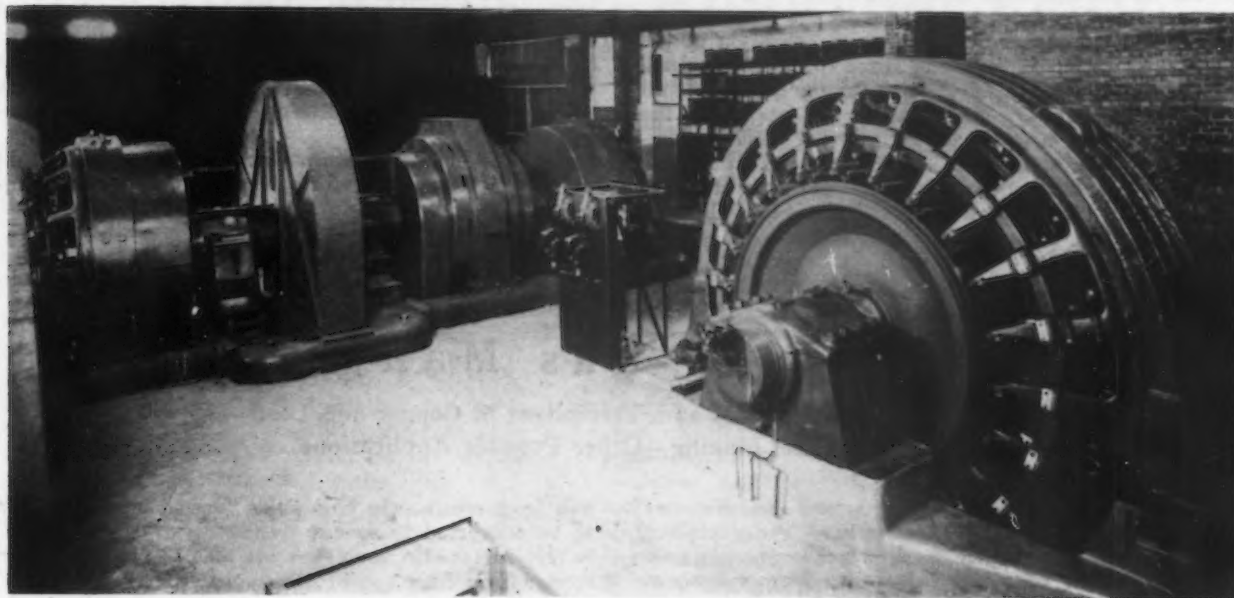
Results from Operating Practice

Robert McEldowney, superintendent of blast furnaces, Bethlehem Steel Co., Johnstown, Pa., reported use of blast furnace coke from equal amounts of low- and high-volatile coal. All of the low-volatile coal is washed. Figures covering 1922 to 1926, inclusive, show that the low-volatile coal ran from 12.19 to 15.65 per cent in ash and average 2.75 per cent in sulphur prior to washing, and 8.65 per cent in ash and 1.20 to 1.40 per cent in sulphur after washing. The unwashed high-volatile coal ran 9 per cent in ash and 1.40 per cent in sulphur in 1922, while it now runs 12 per cent in ash and 1.60 per cent in sulphur. This is probably the explanation of the fact that the coke ash, which averaged 11 per cent in 1922, now averages 17 per cent, and the sulphur has increased from 1 per cent in 1922 to 1.25 per cent in 1927.

High-volatile coal is not so good chemically, Mr. McEldowney said, as it was a few years ago. He said that washing of coal will mean a coke better chemically and physically. Experience in making low-phosphorus pig iron in a furnace with a 17-ft. hearth, with a burden of 55 per cent sintered Cornwall ores, 25 per cent Mahoning, 15 per cent Corsica and 5 per cent scale, showed a pressure of 24 lb. necessary on the coke from unwashed coal and only 18 lb. on coke from cleaned coal.

A. H. Harris, Jr., superintendent coke plant, Bethlehem Steel Co., Lackawanna, N. Y., touched upon the necessity of cleaning coal running 10 per cent in ash and 3 per cent or more in sulphur. But as the moisture factor is important, there is need to study dry cleaning methods. The critical moisture point in coal, Mr. Harris said, seems to be about 5 per cent, as at that percentage it seems to hang in the cars, bins and charging holes and causes trouble in these days when the coking ovens are being built narrower than in former years. Moisture helps to keep down the carbon in the coke in the ovens, but it sets up a problem in cold weather by making thawing necessary.

Motor Room of 34-In. Reversing Blooming Mill, Bourne-Fuller Co., Cleveland. The 4000-hp. reversing motor is at right, with the flywheel motor-generator set in the background. Between them is a solenoid-operated circuit breaker connecting the armatures of the generators with that of the motor



Blooming Mill Given Electric Drive

Reversing Motor of 4000 Hp. Installed by Bourne-Fuller Co.

—Better Product Reported at Lower Cost

AN electric drive for its two high reversing 34-in. blooming mill was recently placed in operation by the Bourne-Fuller Co., Cleveland, at its Upson plant. This replaces a twin-cylinder non-condensing steam engine that had been used since the plant was built in 1911. This engine exhausted into a regenerator which could use only a portion of the steam. Part of the remainder supplied the feed-water heater and the rest went into the atmosphere. The new blooming mill drive is a step in the complete electrification of the plant. A 5000-kw. generator is being installed to utilize the waste heat from the open-hearth furnaces and blast furnaces, and an electric drive will be provided shortly for the finishing mill, taking the place of the present steam engine drive.

No attempt was made at rapidity in the installation of the electric drive, which required about six weeks. Because of the limited space, no preliminary work could be done until the steam engine was dismantled and taken out.

The reversing motor and the motor-generators are practically duplicates of the drive of the 36-in. blooming mill of the Donner Steel Co., Buffalo, described in *THE IRON AGE*, April 15, 1926. The induction motor of the motor-generator set has the same power as that installed in the Donner plant, but differs in that it is designed for 60-cycle instead of 25-cycle operation.

As no change was made in the mill line, a change was not required in the main spindle and pinions. The drive of the mill from the steam engine was through a universal type coupling and lead spindle. In installing the motor drive a new half-coupling for the motor end was joined to the mill half of the coupling formerly used.

Details of the New Equipment

The reversing motor is a shunt-wound unit operating on 750 volts d.c. and has a speed range of 58 to 140 r.p.m. It has a continuous capacity of 4000 hp., based on 50 deg. C. temperature rise, being capable of developing 362,000 ft.-lb. torque at 58 r.p.m. As the speed is increased by weakening the motor field, the rated torque decreases to 150,000 ft.-lb. at 140 r.p.m., the rated horse power remaining constant. The motor has a voltmeter calibrated to read in r.p.m. The voltmeter is operated from a tachometer generator geared to the main motor shaft.

The motor-generator set consists of two 1800-kw.,

514-r.p.m., 750-volt d.c. generators based on a 50-deg. C. rating, which operate in parallel and are driven by a direct-connected 3000-hp., 514-r.p.m., 2200-volt, 3-phase, 60-cycle induction motor. The motor and generators are mounted on the same base. A plate-type flywheel is mounted between the motor and one of the generators. The reversing motor and the units of the motor-generator set are open at one end for ventilation. Forced ventilation by washed air is provided.

The exciter set consists of a 50-kw. shunt-wound generator operating on 250 volts at 1200 r.p.m. for motor excitation, a 35-kw., 1200-r.p.m., 275-volt shunt-wound generator for generator excitation, a 10-kw., 1200-r.p.m., 250-volt compound-wound generator and a 125-hp., 1200-r.p.m., 220-volt induction motor for driving the set. There are three 60-cycle 75-kva. single-phase oil-insulated self-cooled transformers for stepping down the current from 2200 to 220 volts.

Washed air for ventilation is supplied by two air washers, each with a capacity of 30,000 cu. ft. per min. The two pumps are driven by 7½-hp., 1800-r.p.m., 220-volt induction motors and the two fans by 25-hp., 720-r.p.m. induction motors.

An interesting feature of the layout is the location of the control equipment, slip regulator, exciter sets and various instruments on a balcony about 5 ft. above the motor room floor, and overhanging from a lean-to into the motor room. This permits placing the air washers and fans under the balcony without going down so far below the mill room floor as would otherwise be necessary. The removal of two air compressors and condenser pump from the lean-to and a slight enlargement provided space for the balcony and control equipment.

Foot Control for Motor

Operation of the reversing motor is by a foot control. In this respect it differs from the blooming mill drive in the Donner plant, where hand control is provided for the reversing motor. The forward and reverse speeds are controlled by two pedals through a master controller. The foot-pedal control leaves the hands of the operator free to operate the screw-down and mill tables. There are three hand-operated master controllers, one for the screw-down, one for the forward and backward operation of the mill tables and one for the ingot approach table.

The control equipment is located in the same opera-

tors' pulpit that was used for the steam drive. In connection with the hydraulically operated manipulator an electrically operated side guide manipulator has been placed on the approach side of the blooming mill, the two manipulators being operated from the pulpit by one man. The new arrangement permits operation of the mill with two men, in place of three formerly required.

Operation of the electric drive for the blooming mill during a period of several weeks indicates that the power cost will be reduced over 50 per cent as compared with the steam drive. The mill is turning out a better product than it did with the old drive, because of a closer control of the speed. There is less slippage

in the passes, because the maximum speed is held down, and it has been possible to reduce materially the ragging on the rolls. With the engine drive a maximum mill speed of 175 r.p.m. was obtained, but with a motor drive the maximum mill speed is 140 r.p.m. It is not expected that, with maximum speed, as large production will be obtained as with the engine drive. But this is not regarded as an objectionable feature, in view of the fact that the mill is never crowded to its maximum output.

All the electrical equipment for the blooming mill drive and the switchboard were furnished by the General Electric Co.

Sponge Iron Has Many Uses

Commercial Possibilities as a Precipitant of Copper and Lead—
Use for Steel Making—Other Possible Applications

DEVELOPMENT of a limited iron and steel industry in certain western localities where, under present economic conditions, such operations are not commercially feasible, is suggested as the result of experimental work in the production of sponge iron performed by the United States Bureau of Mines at its Seattle, Wash., station. Sponge iron also promises to become of great economic importance in the leaching and precipitation of copper and lead ores.

Sponge iron is the product formed by the reduction of iron oxide to metallic iron at a temperature below the fusion point of the constituents of the charge. A particle of sponge iron has the same size and shape as the particle of ore from which it was reduced, but because of the removal of the oxygen from the oxide it is much more porous. By reason of this porosity, it reacts more vigorously and rapidly than the ordinary massive forms of iron. Under suitable reducing conditions sponge iron can be produced readily on a commercial scale at about 900 deg. C. and can be magnetically separated from a large part of the associated impurities.

Precipitates Non-Ferrous Metals

Sponge iron will precipitate copper, lead, and numerous other metals from solution. The reaction takes place quicker than when a massive form of iron, such as steel scrap or pig iron, is used as a precipitating reagent, and thus plant capacity is proportionately enlarged. Sponge iron is likely to be increasingly important in the hydrometallurgy of low-grade copper and complex lead ores; its production insures a permanent and reliable source of metallic iron—a matter of much importance in view of the small supply of scrap iron and the distances that separate most copper and lead mines from iron-producing centers. It is conceivable that the future success of some large-scale leaching and precipitating processes for copper and lead ores may depend largely upon a supply of cheap sponge iron.

Steel from Sponge Iron

The possibility of making sponge iron and converting it directly into steel, thus eliminating the pig iron stage, has been suggested from time to time, and hundreds of so-called "direct steel" processes have been proposed or tried during the past century. Unquestionably the production of steel from sponge iron has theoretical advantages over the standard methods. It has economic advantages in certain localities. The fact that both electric melting and the production of sponge iron can be conducted economically on a small scale makes such a process particularly advantageous in communities that do not consume much iron or steel. Electric furnace processes, being inherently expensive, are not advocated for the manufacture of iron and steel except where conditions are unusual.

Sponge Iron Has Other Uses

Other uses of sponge iron will probably be developed, once production has been established on a large scale. Some experiments have been made with respect to the use of sponge iron for the production of hydro-

gen from steam—the iron oxide formed in the process to be converted to sponge iron.

Interest is also being shown in the possibility of using sponge iron in place of the more common forms of finely divided iron as a reagent in processes of organic chemistry; the iron oxide formed as a result of the reduction reaction, now a waste product, would be converted to sponge iron and thus used again.

Some work is being done both in the United States and in Canada on the recovery of titanium oxide from ilmenite by reducing the iron to the metallic state and leaching it with acid or a ferric salt solution, leaving the titanium oxide in a purified form for use in the manufacture of paint.

The bureau considers that the possibilities of using sponge iron for iron or steel production in America depend entirely upon the fulfillment of certain special conditions. The requirements for the economical use of the sponge-iron electric furnace process are:

Sponge iron cheaper, per unit of contained metallic iron, than low-grade iron or steel scrap.

Low costs for electric furnace conversion, in particular, cheap power.

High local costs for the production or transportation of iron and steel products made by standard methods.

That sponge iron may be widely used in certain chemical and metallurgical operations which require finely divided metallic iron of high porosity and strong chemical reactivity is conceivable. Sponge iron has many advantages as a precipitant of metals from solution. Such use in copper metallurgy has been advocated for many years, and interest in it has been revived recently. More detailed information in regard to these investigations is contained in Bulletin 270, "Production of Sponge Iron," by C. E. Williams, E. P. Barrett and B. M. Larsen, copies of which may be obtained from the United States Bureau of Mines, Washington.

International Summer School Studies Fatigue in Industry

The first summer school held under the auspices of the I. R. I. (International Association for the Study and Improvement of Human Relations and Conditions in Industry) completed a week of meetings at Baveno, Italy, June 25. The subject chosen for study was the "Elimination of Unnecessary Fatigue in Industry," and Dr. Lillian M. Gilbreth, American consulting engineer, Montclair, N. J., acted as chairman. Among the lectures was one by Mr. Piacitelli, of the Barber Asphalt Co., Philadelphia, on applications of fatigue elimination in industry with special relation to the teaching of new work. Next year the triennial congress of the association will be held, but a summer school on a related subject is expected to be held in 1929. The main points of the discussion, as well as the papers read at Baveno, will be incorporated in a report, which may be obtained from the secretariat headquarters of the association at Goethestrasse 10, Zurich, Switzerland.

Opposing Views on Fluorspar Duty

Domestic Producers Plead for 50 Per Cent Increase—Consumers
Want Import Reduced or Removed Altogether

WASHINGTON, July 26.—With domestic producers pleading for an increase of 50 per cent in the import duty on fluorspar and consumers of the foreign product requesting that the duty be either reduced or removed altogether, sharp differences of view were presented at a hearing on Friday and Saturday of last week before Commissioners Marvin and Dickson of the Tariff Commission on the application of domestic mine operators for an increase of \$2.50 per net ton in the present duty of \$5. The domestic industry was pictured as being greatly depressed and operating at only a fractional part of its capacity, and its life was said to be threatened as the result of inability to meet competition from abroad.

The chief witness for the consumers was C. A. Buck, vice-president of the Bethlehem Steel Co. in charge of raw materials. He was the only steel maker appearing and pointed out that the Bethlehem company is the largest user of foreign gravel spar in the United States. Being the chief steel company that imports the spar, the Bethlehem company, Mr. Buck pointed out, would face the heaviest additional expense from an increased duty. The steel industry of the East, he added, would be discriminated against as a whole, because the industry in the West consumes domestic spar and would not be adversely affected by the greater duty.

Mr. Buck questioned the cost figures of the report of the commission and said that in considering costs of producing spar in England, the chief competing country, there was not taken into account the cost of depreciation, capital investment of plants, and other items. Moreover, he said that the English spar at present is largely a reclaimed product from lead mines, but that these stocks are becoming exhausted, after which the English operators will have to resort to deep mining of spar. In line with a national policy of conservation, Mr. Buck said, it is necessary to preserve domestic reserves which would be needed in case of emergency. He estimated that present domestic reserves will become exhausted in 15 or 20 years. Reference also was made to heavy imports of iron and steel which affect the Eastern seaboard, and the opinion was expressed that not only fluorspar, but all products entering into steel making and steel itself, should be considered.

Domestic Mining Costs Have Increased

Speaking for what he said was about 100 per cent of the producers in Illinois and Kentucky, G. H. Jones, chairman of a committee of operators and president and treasurer of the Hillside Fluor Spar Mines, was the first witness and emphasized the high costs of domestic production. Mr. Jones declared the expense of mining spar has greatly increased since the war because of many things, including higher wages, increased transportation rates, and the higher cost of dynamite, coal and other materials. He also said that the cost of sinking shafts is becoming greater as the mines grow deeper. Mr. Jones attributed the import movement of 1925 and 1926 to the feeling that the duty might be increased. Cross-examined by William W. Robison of the Bethlehem company, Mr. Jones said that his mines ship to Illinois, Indiana, Ohio and Pennsylvania points. So far, he said, there is no competition in the Chicago district from foreign spar, but it was stated that such competition is threatened. The price of fluorspar, Mr. Jones said, is \$18 f.o.b. mines, but it was explained that this figure "fluctuates a little," depending on quality. The price was down two years ago to \$15, said Mr. Jones, owing to overproduction. He told Mr. Robison that production is now limited and that the company operated at a slight profit in 1926, but could do better if the duty were increased and the

output were expanded. Even with an increase of \$2.50 a net ton in the duty, Mr. Jones said, it would not be possible for the mines to ship east of Pittsburgh. Replying to another question, Mr. Jones said he considered the American spar with 85 per cent calcium fluoride a little better than the British spar. Also, he expressed the belief that the American steel maker prefers American spar because of more dependable deliveries and the ability to get it in any quantities desired, while it is often necessary to stock imported spar. Karl D. Loos appeared as counsel for domestic producers.

James A. Green, Cincinnati, one of the applicants for the increased duty and one of the operators of the Holly Fluorspar Co. mines near Marion, Ky., stressed the fact that fluorspar is an absolute essential to the production of open-hearth steel and that foreign spar is used at the armament plants of the country. In case of war, he said, the domestic mines, many of which are now closed, could not be put back on mass production in less than two years. His company's mines, he declared, have been down for seven months owing to inability to meet foreign competition. Mr. Green said his product cannot even get into Pittsburgh or Buffalo.

"The increased duty," said Mr. Green, "would enlarge our market territory, let us get further back east, and return our Pittsburgh territory market, but we would never get to the Atlantic Coast. That market is gone unless costs are cut."

Mr. Green declared that foreign spar is getting farther west and therefore threatening domestic production more and more as time passes.

The mines would be reopened, production would be resumed and the price would not be increased if the duty were increased, said B. E. Clement, associated with Mr. Green in the Holly mines. He made this statement when being cross-examined by Mr. Robison.

Pittsburgh Rate District Consumes Half of Fluorspar Sold

Many mines have been shut down within the so-called Pittsburgh rate district, according to C. W. Haynes, Independent Fluorspar Co., Marion, Ky. By the Pittsburgh rate district Mr. Haynes said he meant western Pennsylvania, the Youngstown district, the Shenango Valley, central Ohio and Cleveland, but he did not include Buffalo and Wheeling, W. Va. In this Pittsburgh rate district, said Mr. Haynes, is produced 50.8 per cent of the open-hearth steel made in the United States. Pittsburgh, western Pennsylvania and the Shenango Valley, he said, produce 27.8 per cent of the total; Youngstown and central Ohio, 17.6 per cent, and Cleveland, 5.4 per cent. Pittsburgh, the Shenango Valley and western Pennsylvania, it was stated, produce 75 per cent of the open-hearth steel made in Pennsylvania. The 50.8 per cent of open-hearth steel produced in the section named, Mr. Haynes said, compared closely with the sales of fluorspar in that district, 50 per cent of which was said to go to the Pittsburgh producing district. The data presented by Mr. Haynes were intended to support his contention that Pittsburgh rate points should be used as the basis for comparing costs of production.

Mr. Haynes declared that it would be disastrous if the Kentucky fluorspar mining industry were closed down, but that such a situation is threatened unless the duty is increased.

R. C. Allen, Cleveland, representing the Rosiclair Lead & Fluorspar Mining Co. of Illinois, said that his company is not selling any acid fluorspar, but is putting it into ceramic grades because the company gets \$32.50 f.o.b. mines, for it after grinding. Reserves of high grade acid spar were declared to be inadequate, but producers and consumers are trying to perfect me-

chanical methods, such as the flotation process, according to Mr. Allen, to increase the supplies. He expressed the opinion that there are more reserves in England than in the United States. Domestic producers, it was said, cannot compete under existing conditions with foreign spar. In order to compete with German spar at Steubenville, Ohio, Mr. Allen said, it would be necessary for domestic producers to reduce their price to \$16, f.o.b. mines.

Bethlehem Steel Co. Consumes 80 Per Cent of Spar Imported

Mr. Buck said that of the 50,000 tons of fluorspar imported in 1926, the Bethlehem Steel Co. took approximately 40,000 tons, or 80 per cent., and consumed about 33,000 tons. He estimated that a similar tonnage would be consumed this year. When it was suggested by Mr. Loos that the increased duty would mean only about 20c. per ton of steel, Mr. Buck replied that on the 33,000 tons of fluorspar consumed an additional duty of \$2.50 a ton would total \$82,500. At a higher rate of operations, he asserted, the extra cost would be greater. He said the capacity of the Bethlehem Steel Co. is approximately 7,600,000 gross tons of ingots annually.

"In my opinion," said Mr. Buck, "the Pittsburgh district must be taken for purposes of comparison as the principal market for fluorspar in the United States. The commission's preliminary statement shows not only that 50 per cent. of the metallurgical gravel fluorspar used in steel production is consumed in the Pittsburgh district but that large percentages of other grades of fluorspar used in the chemical, glass and enameling trades are likewise consumed there. According to the commission's preliminary statement Pittsburgh is also the chief point, at least so far as metallurgical gravel fluorspar is concerned, at which the domestic product and the foreign product meet in a competitive market."

What Bethlehem Inquiry Into Costs Showed

Taking up costs shown in the report, Mr. Buck pointed out that it gave \$20.66 a ton at domestic mines. Within the last few years, he said, the Bethlehem company had made an extensive investigation of domestic fluorspar properties with a view to ascertaining the extent of reserves of that material and also in connection with its consideration of the possible purchase of such properties. Figures as to the cost of production, Mr. Buck explained, were obtained but did not embrace the item of investment included in the figure of \$20.66 in which the report allowed \$3.13 for interest on investment. Even after taking that item from the domestic production cost figure, said Mr. Buck, the resulting cost figure is substantially greater than the cost as ascertained by the Bethlehem company. In fact, he stated, the cost as ascertained by the Bethlehem company showed a profit to the producer at the average selling price in any of the last six years. He concluded that the difference between the cost as ascertained by the Bethlehem company and that given in the preliminary statement must have been brought about by including in the commission's statement the figures of some producers whose costs are greatly out of line with those at the efficiently and economically operated properties. Mr. Buck contended that it is not the intention of the tariff act that the costs of the high-cost domestic producers should be equalized with foreign production costs by levying heavy import duties or even that an average domestic cost "which has been unduly inflated because of the high costs of a few small producers should be used for the purpose of comparison." Moreover, he declared, the use of English selling prices in the United States as a substitute for English costs is not evidence of average costs of English producers and that the method is not comparable with the use of average costs in the United States. He likewise contended that the English selling costs could not be assumed to reflect more than the out-of-pocket cost, including direct mining costs and costs of reclaiming and preparation for the market without any inclusion of items of depletion, depreciation or interest on capital investment. He said that the commission should give special consideration to the peculiar nature of English production as a by-product from lead mines and that

this kind of reserves is nearing exhaustion, after which English operators will have to resort to costly deep mining of spar.

Asks for Reduction of Duty on Basis of Comparative Costs

"If domestic production cost were to be arrived at by figuring from the selling price, as has been done in the case of the English production cost," said Mr. Buck, "the resulting cost figure would not include any allowance for the items of imputed interest, depletion and depreciation."

He urged that the aggregate of these items, which have been included in the domestic figure of \$20.66 to the extent of \$5.31, should be deducted from the domestic cost figure of \$20.66 for the purpose of comparison with production cost of the imported product. With these items of cost omitted from the domestic cost of production, it was declared, the cost of the domestic metallurgical gravel spar laid down in Pittsburgh is materially less than the cost of the corresponding English product laid down in that market. The report of the commission, Mr. Buck said, gives the cost of the domestic product at Pittsburgh, with the items of interest, depletion and depreciation included, as \$25.91 a net ton. With the capital charge items omitted, he said, the figure is reduced to \$20.60. The report gives the cost of the English product at Pittsburgh as \$16 a net ton, exclusive of the duty of \$5, which, when added, brings the Pittsburgh price to \$21. Mr. Buck also maintained that the English fluorspar has a calcium fluoride content of about 80 per cent. whereas the domestic product as marketed has a content of 85 per cent, and better, a difference of 6.25 per cent. in favor of the domestic product. For the purpose of comparison, said Mr. Buck, "the so-called production costs of the foreign product laid down in Pittsburgh should be corrected by the addition of 6.25 per cent., amounting to \$1.31. With this adjustment made, the cost at Pittsburgh of the product imported from England, including duty, would be \$22.31 as against a comparable cost of the domestic product at Pittsburgh of \$20.60, a difference of \$1.71 in favor of the domestic product at the principal market in this country instead of \$4.91 against the domestic product after allowing for the duty."

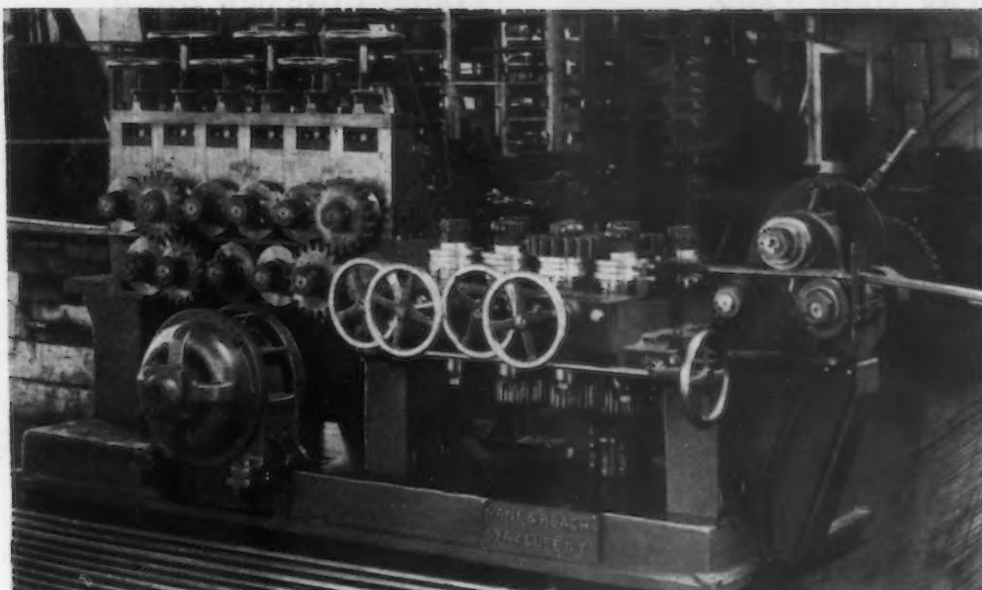
Mr. Buck submitted that the commission should recommend to the President a reduction of the duty by at least \$1.71.

Taking up consumption of spar by the Bethlehem company, which uses foreign material exclusively, Mr. Buck said that the maximum increase of \$2.50 a ton in the duty, if put into effect, would make no difference in the source of Bethlehem's supply.

Burden of Increased Duty Would be Borne Only by Eastern Mills

"It would serve only to place an additional burden of cost upon Bethlehem Steel Co. in the production of steel and a like burden upon a few other relatively small steel producers in eastern Pennsylvania, who are the chief consumers of that part of the imported metallurgical fluorspar which is not used by Bethlehem," said Mr. Buck.

"In fact, if the situation of the steel producers is viewed in its broadest aspects, it will be seen that the Eastern steel producers who are dependent on the imported fluorspar are also the ones which most seriously feel the effects from the foreign finished steel products. If there is to be an upward revision of the tariff on fluorspar, there should also be an upward revision of the tariff on finished steel products. There even is ground for arguing that there should be no duty on fluorspar when viewed both from the standpoint of the Eastern producers and others located elsewhere. It is an essential raw material for the successful and economical production of steel by the open-hearth process, and the most sanguine estimates of reserve supplies of fluorspar known to exist in the productive fields of Illinois and Kentucky represent less than 25 years' consumption at the present rate of annual requirements."



*Hexagon Bolt
Stock and Other
Shapes Are
Straightened
Both Sideways
and Up and
Down in One
Pass of the
Rolls*

Combination Horizontal and Vertical Roll Straightener

Kane & Roach, Inc., Syracuse, N. Y., is offering the roll straightener here illustrated, which is intended for use where it is desired to straighten both sideways and up and down in the same pass through the rolls. In the installation illustrated, the material being straightened is hexagon bolt stock, but by the use of the proper rolls, the machine will handle any of the various shapes and sizes which can be straightened on the company's standard straightening rolls. Before passing through the machine the hexagon stock has a bow of 15 to 30 in. in a 25 ft. length. The roll will deliver this material commercially straight, once through the roll, at a speed of 125 ft. per min.

The machine is of rugged construction and is mounted on a single bed plate. A 15-hp. 1140-r.p.m. motor drives all three units. The pyramid straightening unit located at the feed end, and the vertical roll shaft unit, are driven by roller chains; the horizontal roll shaft unit is gear driven directly from the motor. The pyramid unit can be omitted, if desired. In the installation illustrated the pyramid unit is used to remove the bow in the material so that the effect of the horizontal and vertical plane units will be more uniform.

After leaving the pyramid unit, the material passes through the vertical roll shaft unit from which it is guided into the horizontal roll shaft unit. Both vertical and horizontal roll shaft units are provided with independent adjustment of the upper rolls. In addition, the vertical shaft unit is adjustable in and out

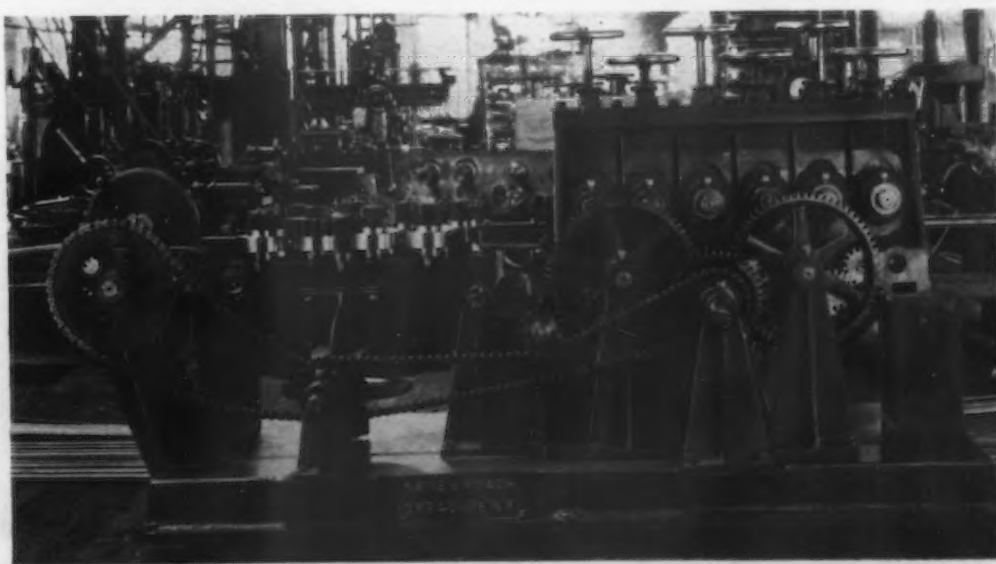
as a complete unit so that the center line can be maintained for various diameter material. Scales and pointers are provided so that a record of the various settings can be kept.

The machine has capacity for 3/8 to 1 1/4-in. hexagon stock, or proportionate sections. The roll illustrated is arranged for straightening hexagon stock ranging from 7/16 to 1 1/8 in., graduated in 1/16 in. Only one set of rolls is required to handle this complete range. This type of machine can be modified to meet specifications. The 12-roll horizontal shaft unit can also be supplied in an eight roll unit, when desired. This type of straightening roll is built in several sizes.

Approve Merger of Erie Steam Shovel and Bucyrus Companies

Directors of the Bucyrus Co., South Milwaukee, Wis., and of the Erie Steam Shovel Co., Erie, Pa., have approved a plan for merging the companies, according to an announcement of William W. Coleman, president of the former company. Under the plan preferred stockholders of both companies will be given share for share exchange of preferred stock in a new company to be formed. Holders of common stock in the Erie organization are to be given one share of convertible preference stock in the new company for each share held, and common stock of the new company will go to holders of Bucyrus common on the basis of three shares of new stock for one of the old. Preliminary announcement of the proposed merger was made in THE IRON AGE of July 14, page 89.

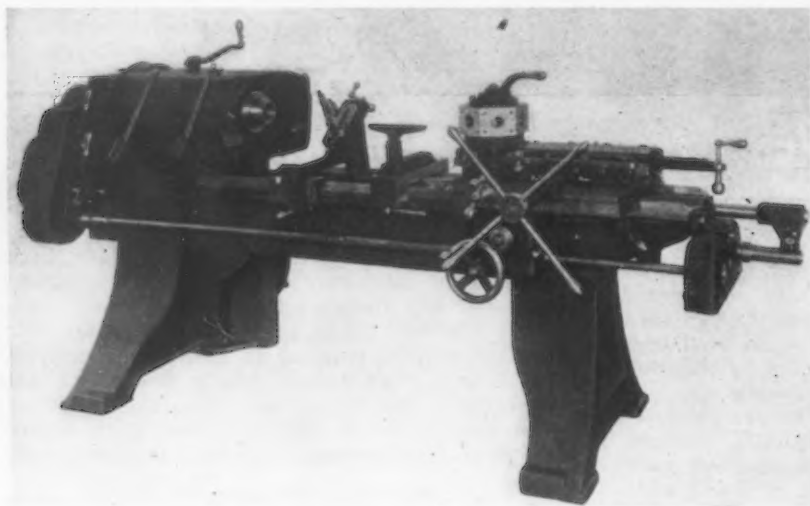
*The Bow in the
Hexagon Stock,
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Length. The ma-
chine straightens
the stock at a
speed of 125 ft.
per min.*



Universal Brass Turret Lathe

Designed with a view to offer a flexible and universal machine to meet demands for machining a variety of parts made of brass or similar metals, and to accommodate a larger range of work, a new 20-in. full universal brass turret lathe is being put out by the Acme Machine Tool Co., Cincinnati. The machine is rigidly constructed and the head and bed, cast integral, is of unusual weight. One effort has been to reduce vibration to a minimum—a fact appreciated when machining, at high spindle speeds, castings which are out of balance.

The head, which is cast solid with bed, is regularly furnished with 3-step cone and friction back gears. Two speeds are provided for each cone step or single-pulley drive patented quick-change all-gear head. This makes 12 speed changes, including forward and reverse. Quick acting lever on the hexagonal turret operates the lock bolt and binds the turret. The slide on



(Above) Rigidity and Adaptability Are Features Stressed for This Universal Brass Turret Lathe. The carriage unit can be traversed the full length of the bed

(At Right) Saw Bench with Table Tilted to Maximum (45-Deg.) Position. Gages may be placed either side of saw, whether for cross cut or for ripping

which the turret is mounted may be quickly fed to and from work by hand through the turnstile, or slowly hand operated by ball crank lever at end of slide. A cross movement is provided for the turret. Attention is called to the large bearing area and long, narrow dove-tailed guide of the cross slide.

To insure permanent alinement the flat ways on which the saddle was formerly mounted have been replaced with the vee type. The entire carriage may be traversed along the vees by hand or power feed. Being able to feed the entire carriage unit the full length of bed makes possible the use of long piloted boring bars. It permits rigid setups to be made quickly and turret overhang can be reduced to a minimum.

An adjustable taper guide below the bed slides between the vees. It can be clamped in any position and removed when not in use. The design permits taper to be turned by either hand or power feed.

Bed-type chasing attachment is regularly furnished for chasing straight and taper right or left-hand threads. Apron-type chasing attachment can be furnished for the turret carriage for leading taps and dies and chasing internal or external right or left-hand threads. The attachment can be used in conjunction with the taper attachment for chasing taper threads. The same leaders and followers are used as furnished with the bed-type attachment.

To insure accuracy and long life of leaders and followers, the spindle revolves two revolutions to one of leader driving shaft. This allows for the use of coarser pitch leaders and followers, giving greater bearing area. All aprons are so machined that the chasing attachment may be applied at any time. Motor drive can be supplied.

Direct-Drive Saw Bench

Operating by current from the lamp socket, a new saw bench put out by the Gallmeyer & Livingston Co., Grand Rapids, Mich., eliminates gears and belts. The machine is called the "Motor-on-Arbor Saw Bench." It has a table 30 x 34 in., which may be tilted as much as 45 deg. and locked at the desired setting. A graduated dial with pointer indicates the position of the table. A stop provides for quick and accurate return to the horizontal.

To permit use of the cross-cut gage on either side of the saw, two slots have been planed in the table, one on either side. This gage can be set quickly at any desired angle and clamped rigidly in position. An auxiliary wood face piece may be mounted when desired.

Similarly, the ripping gage is machined on both sides and can be used on either side of the saw. Tightening the lever head screw locks the ripping gage in



position and automatically lines it up perfectly with the saw. The saw-guard can be set to allow for the required thickness of cut. Even when raised for 2½-in. stock, it is said to afford adequate protection to the operator. A splinter guard keeps the stock from pinching the saw.

This machine is portable, resting customarily upon two rollers at the back and two stationary feet at the front. Cam action in the handle shown in the illustration raises the front feet from the floor and brings the weight on to a third roller, carried on a swivel bearing moving with the handle. The machine may be equipped with a special 1-hp. motor and larger saw, for a maximum cut of 3½ in. depth.

General Electric Enters Custom Molding Field

The General Electric Co., Schenectady, N. Y., has entered the custom molding business, according to a recent announcement by E. O. Shreve, manager of the industrial department of that company. The product will be marketed under the trade name "Textolite Moulded."

For many years the company has operated, for its internal requirements, two large plants devoted to the molding of a large variety of molded forms for mechanical and electrical purposes, including radiotron bases, knobs, dials and sundry parts; parts of industrial control equipment, wiring devices and all forms of molded insulation. These two plants will be devoted to this new business, under the direction of H. D. Randall.

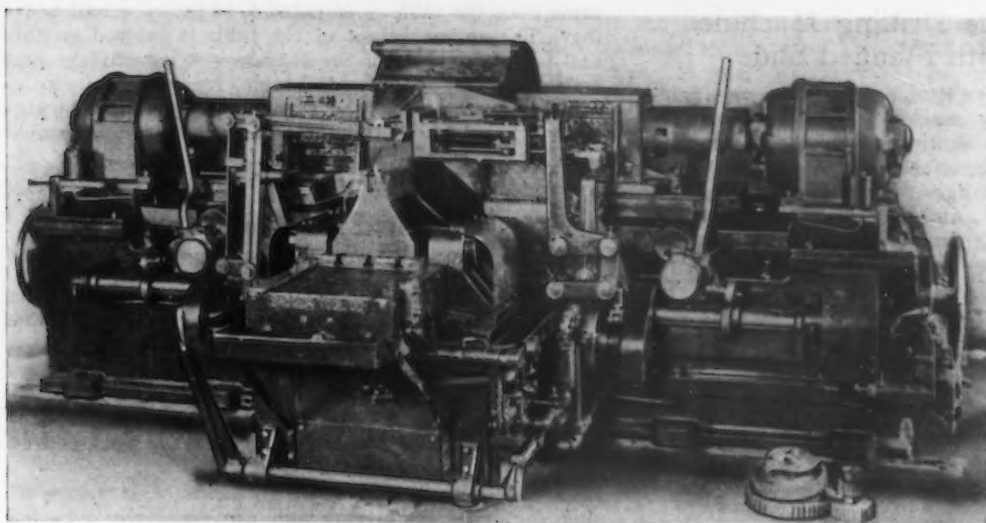


Fig. 2 (at Left)—
Grinding Carbon
Slabs at Rate of 12
a Minute, Within
 $\frac{1}{2}$ Thousandth

Fig. 1 (Below)—
Extra Long Table
Carried on Rolls Is
a Feature in This
Grinder Set-Up

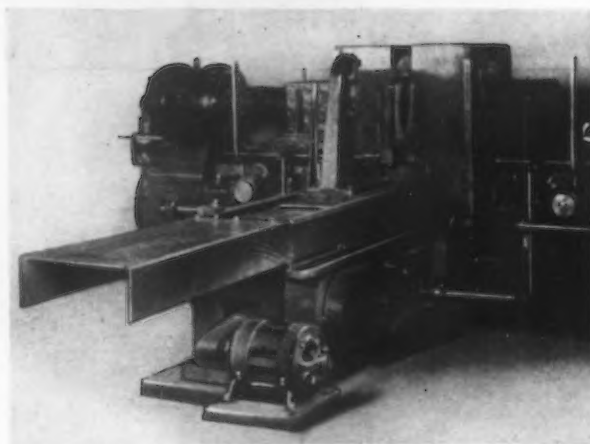
Rigs for Special Grinding Work

Two recent adaptations of the No. 224 grinder, built by the Badger Tool Co., Beloit, Wis., are shown in the illustrations. At Fig. 1, this machine is provided with an extra long table which carries the work to be ground in and out between two parallel grinding wheels. Conforming with the manufacturer's usual practice of eliminating slides wherever it is practical to do so, this table or platen is mounted on 14 roller bearing rolls and four side rolls. All rolls are completely incased and protected against the entrance of grit. They are mounted on eccentric studs so that perfect alinement can be secured and maintained.

The table is driven with separate 5-hp. motor through gears, clutch, bull-gear and rack. The speed of the table on this particular machine is 15 ft. per min., but by use of change-gears different speeds up to 25 ft. per min. can be obtained. The length of table over-all without aprons is 11 ft. and the width is 18 in. It has a travel of 72 in.

A cast iron boiler section is being ground, measuring approximately 48 in. long by 17 in. high by 4 in. wide. A rib $\frac{1}{4}$ in. x $\frac{1}{4}$ in. goes entirely around the edges of this casting on both sides. It is required to face off these ribs parallel and to size. The piece is quickly clamped in the fixture shown and by operating the control levers it passes in between the grinding wheels, which automatically feed up to independent micrometer stop screws. The production is 25 pieces complete each hour.

The main spindles of the No. 224 Badger grinder, as previously described in these columns, are $3\frac{1}{2}$ in. in diameter and are mounted in both radial and thrust ball bearings with Alemite lubrication. Each spindle is connected to 20-hp. motor through "Fast" flexible, sliding coupling with 2-in. lateral travel in each coupling. The entire machine, with exception of spindles, is lubricated by the Bowen "one-shot" system. The cylinder wheels are 24 in. in diameter and the maximum opening between wheels is 24 in. The operating



floor space is 16 ft. by 24 ft. and the complete weight is 23,000 lb.

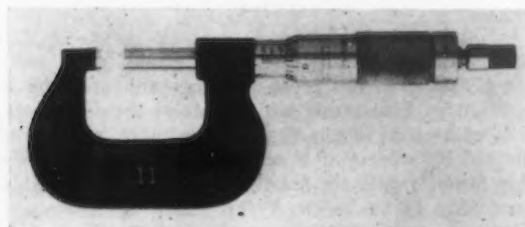
In Fig. 2 is shown the same No. 224 Badger grinder but with shorter table, hydraulically operated with "Oil-gear" unit. This table also is mounted on roller bearing rolls and is continuous and automatic in its travel. It has a complete stroke of 24 in., but by means of cams and valves this stroke is divided into periods for loading and grinding time.

The fixture located on top of the table is used for grinding the opposite sides of carbon slabs, 5 in. wide by 8 in. long and up to 2 in. thick. Automatic safety mechanism is provided for loading and ejecting. A production of 12 slabs a minute is secured, within a limit of plus or minus 0.0005 in. for parallelism and size.

The spindles in this machine, mounted in taper bronze bearings, are lubricated by self-contained circulating oil system. The remainder of the equipment is fitted with the Bowen "one-shot" system. Operating floor space is 10 ft. x 16 ft. and complete weight is 20,000 lb.

Micrometer for Awkward Measurements

With a frame designed so that the anvil can be inserted in a narrow slot or keyway, and so that meas-



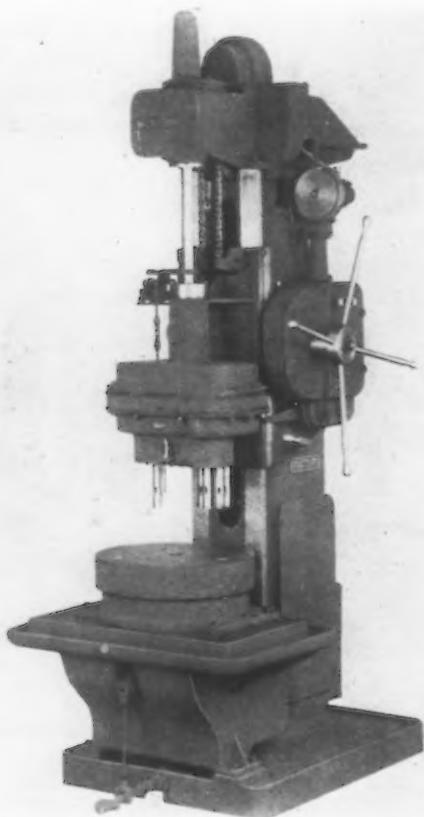
Narrow Anvil and Wide Slot Fit This
Micrometer for Work Difficult to Do Other-
wise

urements may be made over awkward projections on the piece being measured, a new micrometer, No. 11, has been brought out by the Brown & Sharpe Mfg. Co., Providence. In addition to these two particular features, a third one to which attention is called is that the adjustment for wear of measuring surfaces may be made quickly and then positively locked. This feature is patented.

As the illustration shows, the opening in the frame is sufficiently enlarged to permit the instrument to function over projections of some magnitude. Thus the root or bottom diameter of splined shafts may readily be measured. At the same time the small size of the frame at the anvil end permits putting the instrument into places where earlier models could not go.

Multiple-Spindle Drilling Machine Arranged with Flanged Slide

Many shops have jobs suitable for drilling on single-purpose multiple-spindle machines, although production is not large enough on any individual job to warrant the purchase of a special machine for it. Other shops have frequent changes in design on a job on which production is high, and do not care to purchase a complete machine each time a change is made. To meet these conditions, the Footburt No. 15½-F multiple



Ease of Changing Heads When Jobs Change Is Stressed for This Drilling Machine with Its Flanged Sliding Unit to Which Multiple Heads May Be Bolted

spindle drilling machine (Footburt Co., Cleveland) has been equipped with a flanged sliding unit to which multiple heads may be bolted.

In changing from one job to another, merely changing heads can be done quickly and easily. Two dowels in hardened steel bushings locate the heads accurately on the slide. With the exception of the flanged type slide, the machine is of the same design as the regular Footburt No. 15½-F drilling machine. It may be arranged for either motor or belt drive. An oil level is carried in the upper drive housing and all bearings are lubricated by the splash system. Correct lubrication for the heads is secured by a small oil pump mounted on the head.

As shown in the illustration, the machine is arranged with a head having two groups of spindles. This is merely one of a number of head constructions possible. The circular table illustrated is of the three-position indexing type, indexing at 120 deg. Three fixtures are mounted on this circular table. The front station is used for loading; the next station for drilling part of the holes and the third station for drilling the remainder of the holes. In this case close centers required this arrangement. Other arrangements are possible, such as using the front station for loading, the next station for drilling and the third station for reaming or counterboring.

A two-position table may be had, so that one or more pieces may be loading while the machine is in operation, thus saving the loading time. The indexing table is operated by the foot pedal in front. A downward pressure on the pedal withdraws the locating plunger from the pilot bushing in the table, and at the

same time the table is elevated 1/16 in. on a ball bearing. The entire weight of the table is carried on this ball bearing, relieving the outside bearing surface and making it easy to index the table, regardless of size.

This machine may be furnished with either a stationary box table as illustrated, or a vertical adjustable table.

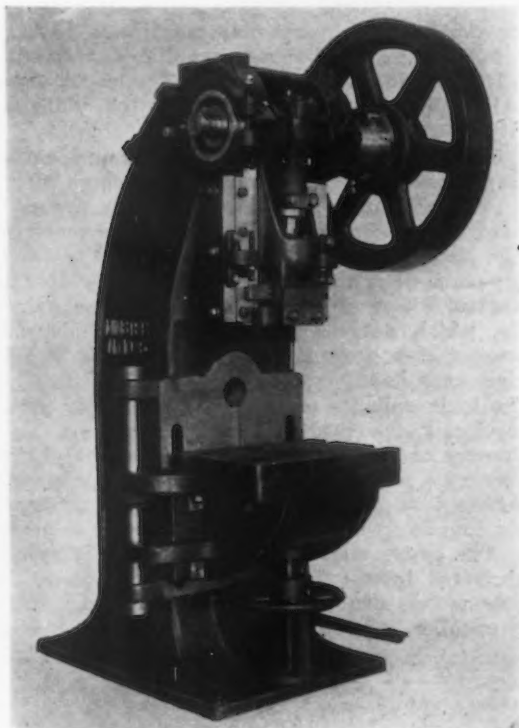
Press Designed for Long Strokes and Work on Pieces of Awkward Shape

A new line of adjustable bed horning and wiring presses has been brought out by the Minster Machine Co., Minster, Ohio. These are made in six sizes, ranging in weight from 1200 to 9200 lb. and exerting a ram pressure of 12 to 56 tons. The three smaller sizes are furnished with flywheel drive only. The larger sizes can be furnished either with flywheel or back-gear drive.

These presses are designed for a wide range of manufacturing operations and are especially adapted for long strokes or for work of an awkward shape. They can be used with a standard table in position or with the table swung out or entirely eliminated and replaced by special fixtures.

The frame is a semi-steel casting having heavy ribs cast on the inside to increase the rigidity. The web forming the finished section on the front part of the frame extends entirely to the top, so that the bed is not open in the back of the slide. The bearings are long and of large diameter and are overhung, so that the upward thrust of the crankshaft is centered in the casting and is not borne by the caps, giving the advantages of a solid bearing.

Hinged to the frame, the swinging table may be swung out of position, carrying its elevating screw



One Feature Is the Ease with Which the Table, with Its Elevating Screw, Can Be Swung Back to Left, Entirely Out of the Way, When the Nature of the Work Requires

with it. Table alignment is maintained by a vertical slot in the face of the press and the table itself is held in position by four studs which extend through slots in the ribbed section of the frame. The table is adjustable for height by means of a screw and handwheel. While a table is not regularly furnished, it is indispensable if the machine is to be used for blanking, forming or similar operations.

The clutch is an improved form of the sliding dog type. The clutch dog or pin and clutch switch are made of hardened tool steel. The point of engagement on the

clutch switch and clutch pin are tapered so that the action of the clutch is always positive. As the clutch switch is arranged to act as a positive stop in case of failure of the brake, the press cannot repeat unless the treadle is held down.

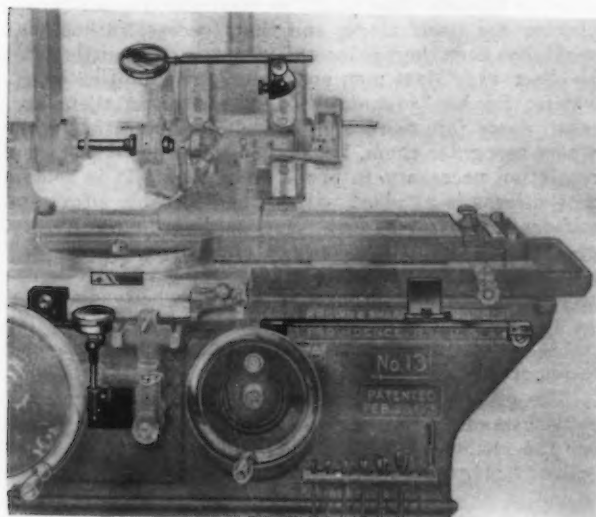
Heavy V-shaped gibs are scraped to a fit with the slide. Adjustment for wear is taken up from one side, so that the gib on the opposite side will always be in rigid position. The bearing part of the slide is grooved for lubrication. The machine has a positive cross bar knockout in the slide and the knockout brackets are attached to the frame instead of to the gibs. The pitman connection is of the ball-screw type.

The flywheel has a bronze bushed bearing and constant lubrication is provided. On the flywheel type of drive the wheel has two striking and backing pins. On the geared type three contact points are provided. The crankshaft is a high-carbon hammered steel forging with enlargement for the clutch body.

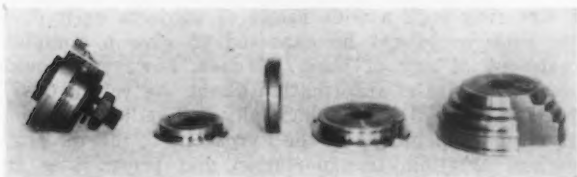
If individual motor drive is required, either the belt or direct gear drive can be furnished on either the flywheel or back-geared type of machine. The motor speed on the flywheel type is 900 r.p.m. and on the geared type 1200 r.p.m.

Circular Forming Tool Grinding Equipment

Equipment has been developed by the Brown & Sharpe Mfg. Co., Providence, to permit grinding easily the contours of screw machine forming tools and other work of a similar nature. The equipment is designed



Location of the Special Equipment Is Shown on One View, While Some of the Work Done Appears in the Other



for use on the No. 13 universal and tool grinding machine. It may be applied readily to the machine and is furnished either as a complete equipment or in separate units.

This equipment is stressed as advantageous when extreme accuracy is desired in duplication of form or contour. It is said to be especially valuable in the case of high-speed steel, where turning is difficult. Greater accuracy in the form produced assures longer life to the tool and provides a more exact and satisfactory product.

Essentially the equipment includes the following: Floating work arbors to hold the work in position between centers; a radius truing device and magnifying glass to provide for accurately truing the grinding wheel to the correct form; a dial indicator mounted in a bracket secured to the bed permits accurate reading

of the table movement, as the point on the indicator engages with a stop secured to the sliding table dog rack. A scale at right of the cross-feed handwheel gives an accurate vernier reading on long work which is beyond the capacity of the dial indicator. The vernier is secured to the sliding table. Fine angular adjustments of the upright are facilitated by a vernier located on the cross-feed carriage at the rear of the machine. When grinding angles, a swivel table vernier provides for additional adjustments.

Shapes Wood, Such as Hammer Handles

A vertical double-spindle high-speed wood-shaping machine, designed especially for tapering and reshaping handles for adz eye hammers, machinist's hammers and for hatchets and other tools after the handles have been turned and dried, in order to make them of uni-



Hammer Handles Are Shaped Between Two Cutter Heads Ready to Receive the Hammer Heads

form size and shape before driving in the hammer heads, has been brought out by the Defiance Machine Works, Defiance, Ohio.

The frame is a one-piece heavy casting with cored base. The top is a separate planed casting 20 in. x 21 in. in size, with a steel form or slide to guide the travel of the saddle and contour strips to govern the shaping between the cutter heads. The carriage slides on top of the table and supports the main form, which has adjustable tracks on each side, giving capacity to shape material up to 12 in. in length with a maximum taper of $\frac{1}{2}$ in. on each side. The stock can be shaped straight or parallel or with irregular shaped edges, the shape being dependent on the contour of the tracks used. The machine will accommodate stock up to 3 in. thick and from 1 in. to $3\frac{1}{2}$ in. wide.

The spindles are $1\frac{7}{16}$ in. in diameter. The spindle ends on which the cutter heads fit are $1\frac{1}{2}$ in. in diameter and extend $3\frac{1}{2}$ in. above the top of the table and will accommodate cutter heads carrying knives up to 3 in. wide. The spindle centers are $8\frac{3}{4}$ in. The cutter heads are square in form and carry four knives with chip breakers which travel in a $5\frac{1}{2}$ -in. cutting circle. Knives with 2 in., $2\frac{1}{2}$ in. or 3-in. face can be supplied as required.

The machine is regularly equipped with a pair of steel cutter heads of $5\frac{1}{2}$ -in. cutting circle, a set of knives, knife setting device and with form and contour strips. The machine is belt driven from a counter shaft consisting of two 20-in. floor stands with Hyatt roller bearings, a $1\frac{11}{16}$ -in. shaft 48 in. long, two driving pulleys, tight and loose pulleys and belt shifting apparatus. It occupies a floor space 54 x 78 in.

The tow-boat Thorpe, the first boat of the Mississippi River Barge Line, is making its maiden cruise from Dubuque, Iowa, to Cairo, Ill., and St. Louis. On its return trip it will tow the first cargo to Minneapolis and St. Paul. Two other tow boats of similar type are now under construction.



BOOK REVIEWS



"Recollections of Men and Events." An autobiography by Joseph G. Butler, Jr. Pages, X + 349, 6 x 9 in.; illustrations, 31. Published by G. P. Putnam Sons, New York and London. Price, \$3.50.

Among the thoughts born of a reading of "Uncle Joe" Butler's autobiography is a wish that more of those who have been in the thick of the industrial battle would provide, for the benefit and pleasure of the rest of us, a record of events and personalities in the developments of which they were a part.

Mr. Butler's book, originally printed for private circulation, is of absorbing interest, in recounting his youthful experiences in selecting and breaking into the iron business and in his intimate tales of the building of the industry, particularly in the Mahoning Valley. An entertaining style of writing, which is more indeed than would be demanded in other hoped-for personal stories of industrial achievement, leads one even to follow through the naïveté of the descriptions of trips abroad and across the United States and to peruse estimates of conspicuous individuals in public life, in politics and on the stage, as well as in business. Styled as "Being some account of activities, experiences, observations and personal impressions during a long and busy life," it is, verily, "some" account.

The boyhood of Mr. Butler throws into relief the changes which have occurred in the span of one life, 87 years though it soon will be. When he attended the "Old White School House" in Niles, Ohio, where one of his fellow pupils was William McKinley, twenty-fifth President of the United States, quill pens were still in use, one steel pen owned by the teacher being regarded as a "badge of importance." The pupils made their own ink from the juice of the pokeberry. Sand was used for drying the ink, there being no blotting paper. The local blacksmith was the only dentist. While chairs were by this time as plentiful as children, there remained the practice of impressing on youth a sense of respect for the elders by keeping youngsters standing at the table during meals. It was at this schoolhouse that Mr. Butler began and ended his entire school experience, quitting at the age of 13 years, and the spot is now occupied by the McKinley Birthplace Memorial, for the creation of which Mr. Butler was responsible. We hardly need to be reminded that there were no railroads in those parts and no telegraphs.

Mr. Butler regards himself as born in the iron business, although his own account shows how he might easily have remained out of it. His birth was "within two hundred feet of a blast furnace, on Dec. 21, 1840" and the furnace was the Temperance, built in part by his father in Mercer County, Pa., and named in honor of his mother, whose name was Temperance. The family moved to Niles before he was a year old and the events of his own recollections revolve first about the company store of the local iron works. Interwoven into the accounts are the names of many men who have left their impress on the industry. When but a youth, he became manager of a rolling mill and shortly thereafter was put in charge of the office (which meant substantially he was the business manager of the company), but only after demanding the opportunity to go to Duff's Commercial College in Pittsburgh, where he got his diploma in three weeks! This period brings into the book the American discoverer of the pneumatic process of making steel, William Kelly, and the discoveries of Brier Hill coal as a furnace fuel and the black band ore underneath the coal, both of which gave a new lease of life to the Youngstown district.

One of the most interesting chapters is that covering blast furnace operations. In this, figure Julian Kennedy, the late Edward L. Ford, William B. Schiller and Carl A. Meissner. Naturally also of great interest is a chapter devoted to the beginning of the steel era in the Mahoning Valley. It tells, too, how it dawned on the directors of the Youngstown Sheet & Tube Co. that their then acting president, James A. Campbell,

was the very type of man they had been seeking for a number of months to take the helm of the company.

One chapter is devoted to the Gary dinners. Mr. Butler emphasizes that it is a true story of those affairs "told long after there might be the slightest disposition to conceal any of the facts, and by one who was present and took part in all of them." Referring to the second dinner, he writes that "not a sentence could be construed even to suggest any illegal method of restraining production or maintaining prices at an exorbitant level."

The meeting in Brussels in July, 1911, also comes in for some interesting observations. He tells how Judge Gary, taking the chair in this international meeting of iron masters, "enunciated the famous Gary doctrine of cooperation versus competition and discussed the proposal to form a World Institute." There had been much enthusiasm over the proposal, but Judge Gary pointed out the need of caution and the plan was finally abandoned as impracticable.

Throughout the book there are many inspiring disclosures of Mr. Butler's philosophies of life; the concluding chapter is almost wholly of this vein and undoubtedly will be rated as one of the gems of the autobiography. "My experience and observation alike confirm the belief" writes he, "that most of the men who have made great fortunes in this country have done so because they found in business a game worth playing for itself alone, and that success, rather than profit, has been their principal incentive." A little later he observes: "Most men encounter opportunities in life which, if taken advantage of, would bring them success. Some fail to recognize such opportunities, while others recognize them, but do not have the courage and resolution necessary to profit from them. It is seldom that success is attained without considerable effort and self-denial." And again: "But, with ordinary ability, good health, industry, courage and thrift, almost any man may be successful in this country. Thrift is especially important in earlier years, when successful men usually get their start, because it is necessary for the accumulation of capital, and capital opens the door to opportunity."

The glimpses here given of what the book contains, notwithstanding that no review could adequately convey the charm of the writing, will show that it is no ordinary biography.

W. W. M.

Marvels of Modern Mechanics. By Harold T. Wilkins. Pages, 280, 5½ x 8 in. E. P. Dutton & Co., 681 Fifth Avenue, New York, 1927. Price, \$3.

Covering such a wide range of subjects as it does, this book could not be expected to give a complete treatment of any of them. It does, however, provide interesting bits of information about the recent developments in the field of telegraphy and radio, the application of the principle of the gyroscope to marine engineering, aviation, transportation and prospecting for minerals and about the adoption of known and proved scientific principles to the general field of aviation.

The author quotes an experienced pilot in passenger air service across the English Channel on the remarkable progress of commercial aviation. "At night," says the pilot, "you can sit back in your seat in the cockpit, peer around the side of your machine and see the ground lights come pouring in over your wings. You have your radio signals from the land stations, and over the sea, you can listen in for the warning sounds of the submarine leader cable telling you if you are on your right course." "The Pilot," the author goes on to say, "did not mention the fact that in three years of flying on the British and Dutch commercial airways there was only one passenger fatality for a total of 2,650,000 passenger miles flown."

Discussing the changes taking place in marine transportation, the book outlines the possibilities of

the motor ship, propelled by oil-burning Diesel engines. These, he feels, will some day completely displace coal burning vessels. The rotor ship, making use of the principle of wind propulsion, the author feels will supplement rather than supersede old methods of transportation.

"Marvels of Modern Mechanics" will prove interesting reading for the person who desires a superficial knowledge of modern scientific developments.

Tests on Bearing Value of Large Rollers

Bulletin 162 of the Engineering Experiment Station, University of Illinois, Urbana, dealing with tests on large rollers, was prepared by Prof. Wilbur M. Wilson. Copies may be obtained at 40c. each from the station. The object of the investigation was to obtain data on which to base the design of rolling bascule bridges. Many diagrams illustrate the text.

Among the conclusions reached were that elastic deformation of material subjected to a heavy load causes a cylinder and a plane surface of a block to come into contact over a considerable area. If the load increases beyond the elastic limit of the material, a permanent flattening of the cylinder or depression in the base block, or both, are caused. A plate rolled between such a cylinder and a base with a plane top will elongate, in a direction normal to the axis of the cylinder, if the load is sufficiently great.

Discusses Budget Control

A booklet entitled "Business Control Through Analysis," copies of which are available without cost through any of the firm's offices in various cities, has been published by Ernst & Ernst, accountants, 80 Maiden Lane, New York. The booklet explains that in preparing the budget an advance estimate of sales is made according to lines of merchandise and the months of the budget period. Buying allowances, production schedules, collections, improvements, financing and profits are planned in the light of the sales estimate. The calculations, it is stated, are based on analyses of past operating results, study of markets, trade conditions and business trends.

The booklet says that most companies entering upon budget control are to a greater or less extent unprepared for it and that usually six months to a year or more must elapse before the proper basis can be reached, while, in the meantime, any budget that may be put into operation, although it may be of material benefit, is more or less experimental. The suggestion is advanced that those who have planned to start operating a budget from Jan. 1, 1928, should consider the advisability of putting one into operation now as a basis for more effective budgeting when the new year begins.

A tubular electric heat treating furnace, which has been developed by H. O. Swoboda, Inc., 3400 Forbes Street, Pittsburgh, is discussed in a short article by Mr. Swoboda, available in pamphlet form. It describes the construction of the furnace and is said to embody a radical departure from the prevalent pusher type of furnace.

The Ajax Electrothermic Corporation has recently printed a bulletin to describe the possibility of quantity steel production in its Ajax-Northrup high-frequency furnaces. It is entitled "250 lb. of Steel Every 20 Min." Emphasis is laid on the subject of melting possibilities with the new large capacity furnaces which the company has recently developed. The pamphlet is well illustrated.

The Crucible Steel Co. of America has recently distributed a pamphlet entitled "HYCC" which describes a type of tool steel developed in recent years by the company. The pamphlet contains 40 pages and is profusely illustrated. The heat treatment of the steel is taken up at length.

Iron Ore Directory for Minnesota

A pocket size directory of 230 pages has been issued by the School of Mines of the University of Minnesota (Minneapolis). It contains not only township maps locating the properties on the various ranges but a list of all mines, showing their owners, annual shipments since 1922 and total to date, together with the tonnage available estimated as of May, 1926. Supplementary tables list the operating and holding organizations, data on the washeries and screening plants, the grades of ore shipped, and various statistics concerning analyses, prices, and shipments. The directory sells for \$1.

One table shows the amount of beneficiated ore (that is, washed, screened, crushed, dried, sintered or otherwise concentrated) to be 36 per cent of the total shipments from Minnesota.

Foreign Agency Agreements

A topic of interest to American exporters is dealt with in a pamphlet issued by the American Foreign Credit Underwriters, Inc., 381 Fourth Avenue, New York. It is entitled "Foreign Agency Agreements," and is the work of William G. Marvin, senior partner in the international law firm of Marvin & Bergh. The pitfalls of doing business abroad through agents are carefully considered in this booklet and advice is given how to avoid them. The essentials of a binding and mutually satisfactory agreement are stated, and pointers are given to manufacturers and exporters on the general subject of increasing their sales abroad with the help of reliable foreign resident agents.

The matter is handled compactly, and the booklet may be included without cost in the library of any exporter and manufacturer interested in foreign trade. Readers of THE IRON AGE are invited to ask for copies.

Hydraulic Standards

Standards of the Hydraulic Society, 90 West Street, New York, have just been issued in a booklet of 80 pages, illustrated. Copies may be had of the secretary of the society at 50c. each. Principles of business conduct and definitions and values adopted by the society, including those of the American Society of Mechanical Engineers, are gone into at some length. Several pages of data together with curves of performance, qualities, etc., complete the booklet.

The first and second issues of the *Shipyard Bulletin*, a monthly employees' magazine of the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., have been published. Among the articles in the first issue is one by James W. Owens on "Our Company's Recent Welding Developments," and a staff article on "Ships Converted by Dieselization." Other items deal with improved mechanical equipment recently installed in the plant, the company's material distribution system, and the cost of handling material. There is a page listing the work on hand, a column of apprentice notes, and a short article on piece work percentages, by departments. The paper is well arranged and bears the mark of substantial editorial policy. The editorial staff includes E. J. Robeson, Jr., as editor-in-chief.

Motor vehicle registrations totalled 20,744,197 cars, trucks and buses on July 1, according to a survey just completed by *Automotive Industries*. This is a gain of 1,164,329 or 6 per cent over the total for the same date last year. From Jan. 1, 1927, however, there is a drop which is accounted for mainly by the large number of cars scrapped last year. Over 2,000,000 vehicles were scrapped or otherwise destroyed last year, it is estimated, and the new car and truck sales this year have not yet made up for the resulting deficiency.

"Ten Answers to Casting Problems" is the title of a leaflet of ten pages issued by the International Nickel Co., New York, which discusses the effect of nickel upon gray iron castings in all its phases.

European and British Markets Quiet

Mills Need Spot Business—Lower Tariffs Discussed in Germany and Czechoslovakia—International Sheet Syndicate Formed

(By Cable)

LONDON, ENGLAND, July 25.

PIG iron has been quiet owing to the holiday season. Although domestic consumers have shown slightly more interest in early deliveries, forward business is still negligible.

Buyers are expecting lower prices, but Cleveland makers assert that further reductions are impossible at present. Hematite is quieter and prices show an easier tendency. Foreign ore continues dull.

Finished steel markets are generally quiet as a result of the holidays.

Welsh steel mills refuse to reduce sheet bar prices and the tin plate market as a result continues virtually idle. Works are competing keenly for orders and as low as 18s. 4½d. (\$4.45) per base box f.o.b. works port has been accepted for early shipment with forward delivery at about 3d. (6c.) per base box more. Consequently, consumers are watching the situation carefully.

Galvanized sheets are quiet generally, makers endeavoring to maintain No. 24 gage corrugated sheets in bundles at £14 (3.03c. per lb.) per ton f.o.b. but £13 17s. 6d. (3.00c. per lb.) f.o.b. has been accepted for large lots and probably sizable business would bring out further concessions. There is increased activity in Japanese thin gage black sheets and some mills have sold into September. Other gages continue quiet.

Continental markets are dull with British consumers of semi-finished disinterested except for forward contracts. On the other hand mills are in need of prompt specifications and are not eager sellers for forward delivery. Prompt shipment material is, therefore, inclined toward weakness. Export demand for finished products is quiet.

The Belgian pig iron output in June was 302,000 tons and the steel ingot production 292,000 tons. The South African railroads are inviting tenders on 125 locomotives, the total value of which is estimated at £1,000,000.

FRENCH MARKET DEPRESSED

Mills Seeking Orders for Prompt Shipment—Prices Show Weakness

PARIS, France, July 15.—The usual summer lull in business is beginning to appear in the domestic market, but a slight improvement is reported apparent in export trade with a number of orders on the Brussels bourse from India and Japan. These, however, were reported in the first week of the month and since then export trade has also been quiet with more mills seeking business than formerly.

It is becoming difficult to close domestic business, particularly since the recent slight reduction in the prices of coke, which has given buyers the impression that this will be reflected in a slight reduction in iron and steel prices.

The temporary depression of business caused by the report that negotiations for the Franco-German commercial agreement had failed has been corrected by a later report that negotiations are continuing and a definite agreement is expected. It had been reported in some quarters that should a Franco-German commercial treaty not be concluded, Germany might denounce the International Steel Cartel, but this seems unlikely.

The commission named by the International Steel Cartel to study the proposals for the entry of Poland into the cartel has postponed its meeting from July to September, in order to collect all the data necessary for complete discussion.

Pig Iron.—Although the export price on foundry pig iron is nominally £3 3s. to £3 4s. (\$15.28 to \$15.52) per ton, some actual sales have been made as low as £3 1s. (\$14.79) per ton, f.o.b. Antwerp. On a lot

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.85 per £ as follows:

Durham coke, del'd.	£0 19s.		\$4.60
Bilbao Rubio ore†	1 1½		5.21
Cleveland No. 1 fdy.	3 12½		17.57*
Cleveland No. 3 fdy.	3 10		16.97*
Cleveland No. 4 fdy.	3 9		16.73*
Cleveland No. 4 forge	3 8½		16.61*
Cleveland basic	3 15	to £3 15½s.	18.18 to \$18.30
East Coast mixed	3 16	to 3 16½	18.42 to 18.54
East Coast hematite	3 17½		18.79
Rails, 60 lb. and up.	7 15	to 8 5	37.58 to 40.01
Billets	7 5	to 7 10	35.16 to 36.37
Ferromanganese	12 0		58.20
Ferromanganese (export)	10 15	to 11 0	52.13 to 53.35
Sheet and tin plate bars, Welsh	6 5		30.31
Tin plate, base box	0 18½	to 0 18¾	4.45 to 4.50
Black sheets, Japanese specifications	13 15		66.68
C. per Lb.			
Ship plates	7 12½	to 8 0	1.65 to 1.73
Boiler plates	10 10	to 11 0	2.27 to 2.38
Tees	8 2½	to 8 12½	1.75 to 1.87
Channels	7 7½	to 7 17½	1.60 to 1.70
Beams	7 2½	to 7 12½	1.54 to 1.65
Round bars, ¾ to 3 in.	7 12½	to 8 2½	1.65 to 1.75
Steel hoops	10 10	to 11 0	2.28 to 2.39
Black sheets, 24 gage	10 5		2.22
Galv. sheets, 24 gage	14 0		3.03
Cold rolled steel strip, 20 gage, nom.	14 0		3.03

*Export price, 6d. (12c.) per ton higher.

†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

(Per Metric Ton)				
Foundry pig iron: (a)				
Belgium	£3 0s.	to £3 1s.	\$14.55	to \$14.79
France	3 0	to 3 1	14.55	to 14.79
Luxemburg	3 0	to 3 1	14.55	to 14.79
Basic pig iron:				
Belgium	2 19	to 3 0	14.30	to 14.55
France	2 19	to 3 0	14.30	to 14.55
Luxemburg	2 19	to 3 0	14.30	to 14.55
Coke	0 18		4.37	
Billets:				
Belgium	4 6	to 4 8	20.85	to 21.33
France	4 6	to 4 8	20.85	to 21.33
Merchant bars:				
Belgium	4 13		1.02	C. per Lb.
France	4 13		1.02	
Luxemburg	4 13		1.02	
Joists (beams):				
Belgium	4 14		1.03	
France	4 14		1.03	
Luxemburg	4 14		1.03	
Angles:				
Belgium	4 15		1.04	
¼-in. plates:				
Belgium (nominal)	6 5		1.37	
Germany (nominal)	6 5		1.37	
¾-in. ship plates:				
Belgium	6 0		1.32	
Luxemburg	6 0		1.32	
Sheets, heavy:				
Belgium	6 1		1.33	
Germany	6 1		1.33	

(a) Nominal.

of foundry iron containing up to 0.6 per cent. phosphorus, as low as £3 0s. 6d. (\$14.67) per ton, f.o.b. Antwerp was recently quoted. There has been considerable improvement in hematite sales. Although the June quota of 32,000 tons for the domestic market was 2000 tons more than the May total it was easily sold and the 35,000-ton quota established for July has already been shipped to consumers. The current agreement of French pig iron producers is in force until Aug. 1, after which the new agreement, recently negotiated, becomes effective for one year. The new contract shows some change in the distribution of tonnage. This renewal of the agreement is contingent upon renewal of the entente with Belgian and Luxembourg furnaces.

Semi-Finished Material.—Following recent strength in the market, particularly for export, prices are showing softness and business has declined considerably as a result of lack of interest in purchasing by British consumers. Blooms are quoted at £4 to £4 1s. per metric ton (\$19.40 to \$19.64) f.o.b. Antwerp and billets as £4 5s. to £4 6s. per ton (\$20.61 to \$20.95) f.o.b. Antwerp. Domestic business, however, is poor and prices are showing weakness.

Finished Material.—Both domestic and export business have been so limited recently that mills are beginning to consider the possibility of curtailing output. For export beams are quoted at £4 11s. 6d. to £4 12s. per metric ton (1.00c. to 1.01c. per lb.) f.o.b. Antwerp and bars range from £4 13s. to £4 13s. 6d. (1.02c. to 1.03c. per lb.) f.o.b. Antwerp. Sheet prices are still very low but only for prompt deliveries. Mills are in need of immediate tonnage and are apparently willing to shade prices to obtain it, but when long term contracts are offered a firmer attitude is shown. For export sheets are fairly firm and heavy gages are quoted at £6 per metric ton (1.32c. per lb.) f.o.b. Antwerp.

Bridge Builders in Germany May Merge

HAMBURG, GERMANY, July 9.—Current exports of bridges and bridge material are unusually large. The monthly average of such material exported throughout 1924 was 410 tons. This increased to 730 tons a month in 1925 and to 980 tons a month in 1926. Thus far in 1927 the monthly average has been 1450 tons with an average value of \$74.30 per ton, about 7 per cent higher price than in 1924.

Business is reported satisfactory, particularly on contracts with Norway and Sweden and in South American countries. Exports are expected to show still more increase as a result of several contracts recently booked.

Bridge builders and steel fabricators are negotiating to form a syndicate and agreement has been practically reached. It is expected that foreign sales offices will be established in important markets to follow developments in bridge building and general construction of this nature. A recent report suggested that a merger may be made of all the German bridge builders and steel fabricators, about 14 companies in all. The leading companies in the field are the Berg-Heckmann-Selve A. G. and the Aktiengesellschaft für Brücken und Eisenkonstruktionen.

German Electric Equipment Sold to Australia

HAMBURG, GERMANY, July 9.—For the first time since 1914, several large orders for public works in Australia have been placed with German companies. The Orenstein & Koppel A. G., Berlin, has booked an order totaling about £44,000 (\$215,340) covering equipment for the Victoria State Electric Commission and the Friedrich Krupp A. G., Essen, has taken a contract for cars valued at £2,850 (\$13,822.50). The Siemens-Schuckert A. G. has taken orders for electric locomotives totaling £7,800 (\$37,830) and other equipment contracts placed with German companies total about £27,500 (\$133,375). The German bids were about 17 per cent under the British prices, despite the preferential tariff enjoyed by British makers.

EXPORT STILL QUIET

Japanese Tin Plate Reported Placed with British —Some Steel Imports

NEW YORK, July 28.—Export trade continues small with only limited buying by Japan. Although tin plate quotations of American mills continue low on export inquiries, prices submitted for the Nippon Oil Co.'s tonnage, 60,500 base boxes of oil can sizes, were apparently too high to secure the order. Iwai & Co., successful bidders, are reported to have placed the business with Welsh mills, but this is not confirmed. The current American market on tin plate for export is understood to be about \$5.35 per base box, c.i.f. Japan, although a slight concession from this price might be secured on a desirable tonnage.

The Tokio Gas Co., which awarded 300,000 ft. of 1-in. black gas pipe to a large Japanese exporter in New York, may make further purchases in the near future. Of the total of pipe placed, 100,000 ft. went to a large independent mill and 200,000 ft. to the leading export interest.

Importers Reduce Holdings

Importers of European steel in New York, who, in several instances found themselves with tonnages of beams rolled to British or Continental specifications, as a result of the recent objection by the Brooklyn authorities to the use of off-size material, are reported to be slowly disposing of their stocks. Recent efforts to import German skelp have not met with success, largely because of the high duty of 25 per cent ad valorem. On one small tonnage under inquiry the quotation of the low American maker is understood to have been about 2.06c. per lb., delivered, and the importer's price 2.03c. per lb., delivered. Prices on Continental bars and structural material continue unchanged at about 1.70c. to 1.75c. per lb. for plain steel bars, Thomas, or Bessemer, grade, and about 1.65c. per lb. for shapes of Thomas grade.

Germany Buys Swedish Ore

HAMBURG, GERMANY, July 9.—The Grangesberg Aktiebolag in Sweden has contracted with several German consumers with the sanction of the Swedish Government, to deliver about 400,000 tons of ore annually to Germany over a period of 10 years. At present, it is understood that three ships a day are being loaded with iron ore at the company's piers at Lulea, Sweden.

German Machinery Makers Ask Lower Steel Tariff

HAMBURG, GERMANY, July 9.—The German Association of Machinery Makers has petitioned the Government to reduce duties on pig iron, semi-finished material and certain finished products used in the building of machinery. The petition promises the support of the industry in carrying out the contemplated reduction of the tariff, which is opposed by the steel industry. It is pointed out in the petition that although, under the terms of the present tariff, the duties on automobiles have been automatically reduced at intervals, the motor car manufacturers were never before in such a satisfactory position.

In this connection it is noteworthy that the Czechoslovakian steel industry has petitioned the Government to reduce or abolish entirely duties on machinery needed by the steel industry. The prices of machinery in Czechoslovakia are high largely because of the tariff and it is considered quite possible that the Government may reduce machinery duties, which would mean increased business for German machinery builders.

British war supplies valued at nearly \$3,500,000, 000 which have been on sale ever since the armistice was signed, have now finally been disposed of, according to Assistant Commercial Attaché Charles E. Lyon, London.

German Output by Districts Exceeds Pre-War

HAMBURG, GERMANY, July 9.—A comparison of the present German steel production with the pre-war output on a basis of the same territories shows that, with the exception of Silesia, the various districts are producing considerably more steel than in the pre-war year 1913. In the Ruhr and Rheinland the output in May, 1927, was 842,984 metric tons, compared with 765,102 metric tons in May, 1913. In the Siegerland the May output was 57,928 metric tons in 1927 and 37,186 in 1913. In north and central Germany the May output was 91,981 metric tons this year and 54,527 tons in 1913, in Saxony 43,742 tons this year and 21,866 tons in 1913, and in South Germany 26,746 metric tons in May of this year, compared with 15,847 tons in May, 1913. The Silesian output shows a decline from 106,540 metric tons in May, 1913, to 36,398 tons in May of this year. These figures are a comparison of the production of finished products, but the same relations are apparent in semi-finished material and pig iron.

International Sheet Syndicate Formed in Europe

HAMBURG, GERMANY, July 9.—Rather unexpectedly a sheet syndicate has been formed in Germany, following protracted negotiations. The new association does not represent all sheet producers in Germany, but is included as a part of the international agreement governing sheet sales. Included in the international association are the Mannesmann Tube Co., which controls a considerable sheet output in the Saar, the Austrian Alpine Montangesellschaft, Czechoslovakian and Hungarian mills. It is stipulated in the international agreement that the whole of Germany, including the Free City of Danzig, will be exclusive for German sheet mills, they agreeing to cease selling into Austria and Hungary, which have been large markets for German sheets. There is also a division of southeastern Europe. The international agreement does not provide for price regulation, merely being a division of markets.

Increased Production of Malleable Castings in June

WASHINGTON, July 26.—Based on reports from 134 identical plants, production of malleable castings in June totaled 58,972 net tons, according to the Department of Commerce, comparing with 57,655 tons in May. Seven plants with an aggregate monthly capacity of 4425 tons were idle during June. Shipments in June amounted to 55,723 tons against 57,269 tons in May, while orders booked were 46,178 tons and 49,482 tons, respectively.

Operations in June based on a monthly capacity of 106,736 tons were at the rate of 55.3 per cent of capacity compared with 54.1 per cent in May. In addition to the data reported by the identical plants three companies not included in the statistics for 1926 reported production of 565 tons in June; shipments, 577 tons and orders, 426 tons. The monthly capacity of these plants is 850 tons.

Falling Off in Fabricated Steel Work

WASHINGTON, July 26.—Bookings of fabricated steel plate in June totaled 25,134 net tons, as against 35,615 tons in May, according to reports received by the Department of Commerce from 45 firms, the respective operating rates being 34 and 48 per cent of capacity. The June bookings were distributed as follows: Oil storage tanks, 7301 tons; refinery materials and equipment, 1186; tank cars, 1537; gas holders, 1772; blast furnaces, 1026; stacks and miscellaneous, 12,312.

The fall meeting of the American Refractories Institute will be held on Thursday, Sept. 15, at the Clifton Hotel, Niagara Falls, Canada.

Better Orders for Commercial Steel Castings

Bookings of commercial steel castings in June are reported by the Department of Commerce at 63 per cent of shipping capacity, compared with 50 per cent in May and with 53 per cent a year ago. The orders called for 84,366 net tons in June, against 66,661 tons in the previous month and 69,835 tons in June, 1926. The current figure is the highest since February and, with the further exception of January and December, it is the highest since April of last year. Bookings for the six months, however, at 505,212 tons, are more than 8 per cent below the first half of 1926, which registered 552,328 tons.

Of the June bookings, 34,702 tons represent railroad specialties, being 58 per cent of capacity in that group. Except for December, January and February last, this is the highest tonnage of railroad specialties since March of last year. Miscellaneous castings show 49,664 tons, or 68 per cent of capacity, against 42,017 tons in May and 53,817 tons a year ago. Railroad specialties in the half year are almost up to last year, with 210,239 tons, against 214,166 tons. There has been a sharp shrinkage in miscellaneous castings, however, the drop being from 338,162 tons to 294,973 tons, or 13 per cent.

Production, at 81,806 tons in June, was the lowest since last October. It included 30,538 tons of railroad specialties and 51,268 tons of miscellaneous castings. Production for the six months has run ahead of orders, with 521,436 tons. This is 13 per cent below last year's 598,467 tons for the first half.

Reduction in Automobile Output

Production of automobiles in June is reported by the Department of Commerce at 314,552 vehicles, of which 274,374 were passenger cars and 40,178 were trucks. The figures are for the United States, as Canadian production is not yet available. There was a drop of more than 20 per cent from the total of 395,674 cars in May, and the June figure was the lowest for that month since 1924. June has shown a drop from May every year since 1922.

For the half-year the total production has been 2,027,840 vehicles, of which 1,779,334 were passenger cars and 284,506 were trucks. The truck total is the largest for the first half of any year to date. The passenger car total, however, was considerably less than that for the first six months of last year, with 2,070,418. It was exceeded also by the first six months of 1925, when the total was 1,856,491. It was closely approached by the first half of 1924, with 1,774,534 cars, and was exceeded by the first half of 1923 with 1,830,956 cars.

To Make Wire Products at Ojibway

According to an announcement by W. B. Perley, general manager Canadian Steel Corporation, Ojibway, Ont., his company has received authority from James A. Farrell, president United States Steel Corporation, to install at Ojibway the equipment from the Hamilton, Ont., plant of the Canadian Steel & Wire Co., a subsidiary of the corporation. It is also understood that a small plant will be installed at Ojibway for drawing and galvanizing wire of various sizes to serve same. The products of the Ojibway plant will be confined, for the present, to woven wire fence, barbed wire, spring wire, galvanized wire, bale ties, etc. The installation of this plant does not mean the completion of the plant at Ojibway, which was started several years ago, nor the completion or operation of blast furnaces or steel works.

The Standard Supply & Equipment Co. has completed offices, warehouse, pipe and storage plant at South Second and McKean streets, South Side, Pittsburgh. The plant is equipped with facilities for the easy handling of merchandise and consists of 50,000 ft. of floor space and has a private railroad siding. The company has other branches in Altoona and Philadelphia and Worcester and Springfield, Mass.

Exports 10 Per Cent Ahead

Monthly Average of Imports So Far This Year 37
Per Cent Off from Corresponding
Period of 1926

WASHINGTON, July 26.—Exports of iron and steel in June of the present year totaled 184,364 gross tons, a decline of 18,344 tons from May with 202,708 tons, but for the fiscal year ended with June the gain was 329,308 tons upon the fiscal year one year ago, the totals being 2,278,168 tons and 1,948,860 tons, respectively. For the six months ended with June of the present year exports aggregated 1,131,868 tons as against 1,028,620 tons for the corresponding period of 1926, a gain of 103,248 tons.

Imports in June of the present year, amounting to 69,017 tons reflected a decrease of 9797 tons from May with a total of 79,814 tons, while for the fiscal year ended with June, 1927, incoming shipments totaled

701 tons from the corresponding period one year ago with a total of 611,633 tons. This decline was due to the heavy curtailment in pig iron imports, the incoming shipments for the respective six-month periods being 60,819 tons and 317,046 tons. Steel bar imports also dropped to 50,824 tons for the six months of the present year as against 54,333 tons for the corresponding

Exports of Iron and Steel from the United States
(In Gross Tons)

	June		Twelve Months Ended June	
	1927	1926	1927	1926
Pig iron	4,863	1,369	38,631	30,587
Ferromanganese	75	107	706	1,694
Scrap	26,086	12,309	146,485	97,691
<i>Pig iron, ferroalloys and scrap</i>	<i>31,024</i>	<i>13,785</i>	<i>185,822</i>	<i>129,972</i>
Ingots, blooms, billets, sheet bar, skelp....	12,096	4,680	111,116	85,369
Wire rods	1,625	1,034	18,516	17,902
<i>Semi-finished steel ...</i>	<i>13,721</i>	<i>5,714</i>	<i>129,632</i>	<i>103,271</i>
Steel bars	6,874	8,630	126,280	124,240
Alloy steel bars.....	732	337	5,400	3,962
Iron bars	487	344	5,539	3,977
Plates, iron and steel.	10,126	14,070	140,358	118,874
Sheets, galvanized ...	14,108	12,410	176,252	159,894
Sheets, black steel...	12,136	11,563	179,125	149,098
Sheets, black iron...	1,654	1,580	17,258	19,552
Hoops, bands, strip steel	4,567	3,526	46,488	46,947
Tin plate; terne plate	18,543	12,432	305,202	181,948
Structural shapes, plain material ...	11,744	15,945	147,317	136,991
Structural material, fabricated	6,824	5,655	66,626	85,296
Steel rails	11,320	14,495	214,573	147,284
Rail fastenings, switches, frogs, etc.	3,178	2,681	39,662	38,856
Boiler tubes, welded pipe and fittings...	20,412	16,673	305,322	264,364
Plain wire	2,740	2,320	27,773	35,903
Barbed wire and woven wire fencing	5,004	4,597	43,149	64,751
Wire cloth and screening	171	211	2,106	2,022
Wire rope	432	310	4,590	6,346
Wire nails	581	802	9,127	11,867
Other nails and tacks	744	712	7,014	8,978
Horseshoes	45	87	580	699
Bolts, nuts, rivets and washers, except track	969	1,107	11,902	15,609
<i>Rolled and finished steel</i>	<i>133,391</i>	<i>130,487</i>	<i>1,881,643</i>	<i>1,627,458</i>
Cast iron pipe and fittings	2,315	4,848	28,232	36,507
Car wheels and axles.	947	1,461	17,717	16,321
Iron castings	568	1,085	10,159	10,325
Steel castings	911	358	7,094	6,160
Forgings	338	315	3,864	2,518
<i>Castings and forgings</i>	<i>5,079</i>	<i>8,067</i>	<i>67,066</i>	<i>71,831</i>
All other	1,149	1,453	14,009	12,770
Total	184,364	159,506	2,278,168	1,948,860

878,017 tons as against 1,080,781 tons for the previous fiscal year, a drop of 202,764 tons. The decline in pig iron imports for the fiscal year ended with June, 1927, amounted to 340,044 tons, as may be found from the accompanying table of imports.

Among gains made in imports for the past fiscal year were structural shapes, steel bars, hoops, bands and cotton ties, wrought tubular products and cast iron pipe.

For the six months ended with June of the present year imports totaled 383,932 tons, a decrease of 227-

Imports of Iron and Steel into the United States
(In Gross Tons)

	June		Twelve Months Ended June	
	1927	1926	1927	1926
Pig iron	13,497	43,106	188,261	528,305
Ferromanganese*	1,636	4,023	33,121	57,041
Ferrosilicon†	263	1,254	13,491	7,065
Ferrochrome‡ .....	.....	.....	575	.....
Scrap	5,992	10,354	88,721	82,818
<i>Pig iron, ferroalloys and scrap</i>	<i>21,388</i>	<i>58,737</i>	<i>324,169</i>	<i>675,229</i>
Steel ingots, blooms, billets and slabs...	1,037	5,111	18,323	28,337
Iron blooms, slabs, etc. ....	.....	.....	306	779
Wire rods	597	743	11,784	8,471
<i>Semi-finished steel....</i>	<i>1,634</i>	<i>5,854</i>	<i>30,413</i>	<i>37,587</i>
Rails and splice bars.	3,238	13,961	36,397	45,844
Structural shapes	12,563	14,011	148,614	82,740
Boiler and other plates	285	1,147	4,409	3,776
Sheets and saw plates	1,395	748	14,887	4,879
Steel bars	9,209	14,902	99,865	86,035
Bar iron	264	558	4,864	6,933
Hoops, bands and cotton ties	2,433	1,547	32,215	15,706
Tubular products (wrought)	7,583	1,367	51,992	30,190
Nails, tacks, staples..	703	675	6,612	4,200
Tin plate	42	548	1,110	2,199
Bolts, nuts, rivets and washers	40	14	258	293
Round iron and steel wire	426	358	4,702	4,115
Barbed wire	284	92	3,754	5,975
Flat wire; strip steel.	215	1,093	3,354	3,303
Steel telegraph and telephone wire	3	37	1,076	252
Wire rope and strand	259	317	2,669	1,869
Other wire	26	34	692	1,455
Wire cloth and screening .....	.....	34	281	416
<i>Rolled and finished steel</i>	<i>38,968</i>	<i>51,443</i>	<i>417,751</i>	<i>300,198</i>
Cast iron pipe.....	6,886	7,818	102,622	65,128
Castings and forgings	141	362	3,072	2,656
Horseshoes .....	.....	1	.....	1
Total	69,017	124,215	878,017	1,080,781
Manganese ore*	36,851	31,315	336,603	388,407
Iron ore	231,815	272,449	2,636,933	2,380,260
Magnesite	3,471	1,714	49,587	63,251

*Manganese content only.
†Silicon content only.
‡Chromium content only.

period one year ago. Gains in imports were held in structural shapes and cast iron pipe.

Gains of most importance in exports for the fiscal year ended with June, 1927, were made in semi-finished steel, plates, black and galvanized sheets, tin plate, steel rails, and boiler tubes and rolled pipe.

Shipments of enameled sanitary ware in June are reported by the Department of Commerce at 402,377 pieces, compared with 376,464 pieces in May and with 442,128 pieces in June last year. The returns are from the entire industry, including 22 manufacturers. Shipments of bathtubs made the largest monthly total since last August, having been 110,314 units. For the six months, however, with 579,986 baths shipped, there was a reduction of 6 per cent below the 617,993 baths in the first half of 1926.

Business Analysis and Forecast

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

GENERAL BUSINESS OUTLOOK

Favorable Factors

1. The general level of commodity prices has become stabilized; stronger scrap prices.
2. Retail trade in large volume; higher in June.
3. New enterprises established gained in June.
4. Bank debits and turnover of bank deposits at high levels.
5. Net gold imports continue.
6. High Federal Reserve ratio; easy money.
7. High purchasing power of factory laborers; purchasing power of farm dollar rising.
8. Strong financial position of leading companies.
9. Light mercantile inventories.

Unfavorable Factors

1. Trend of building activity downward; permits and contemplated construction declined in June.
2. Automobile production declining.
3. Continued decline in employment earnings and payrolls.
4. Narrow profit margins; wages relatively high; increase in business failures.
5. Decline in car loadings and railroad net income.
6. Bank credit too largely tied up in the less liquid loans and investments.
7. Overproduction continues in some basic industries—oil, pig iron, silk goods, etc.
8. Manufacturers' inventories large on the average.

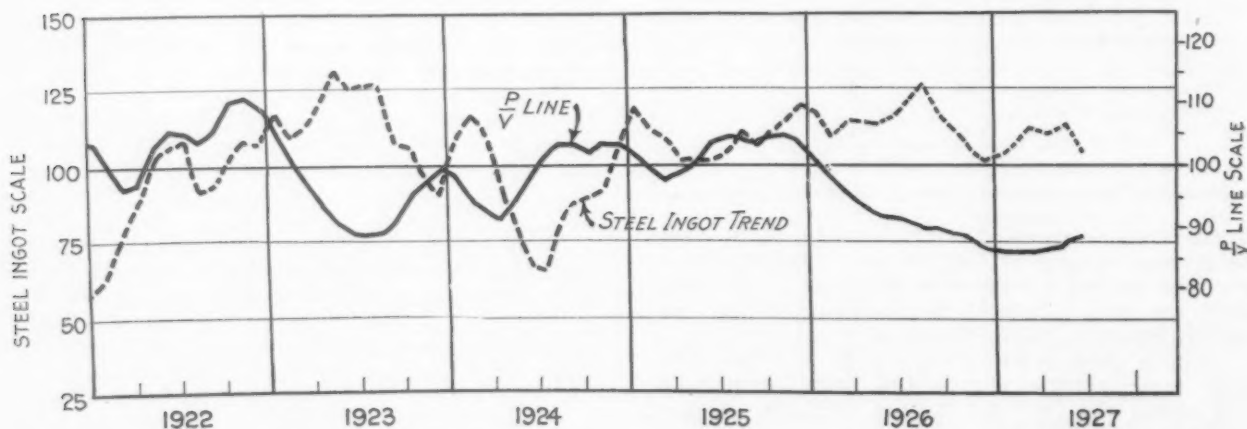
INDICATIONS are increasing that the current downward trend of industry and business is nearing bottom for the year. The P-V Line has risen, showing a better adjustment between demand and supply. There has been considerable (and in some cases, desirable) curtailment of production, as in iron and steel, copper, silk and automobile manufacturing. Commodity prices on the average are firming, including steel scrap. Retail trade picked up in June. The present moderate recession will probably be completed in August and the turn be marked by advances in pig iron and steel prices, accompanying a moderate gain in the demand for those commodities.

A MARKED decline in steel production and an appreciable rise in the P-V Line are two important facts disclosed by the June data. Such a situation has existed several times in recent years. For example, there was a similar divergent trend in May and June, 1924, and again in April, 1925. Like the present, these periods represent a condition in which the outlook for business in general as forecast by the P-V Line, has become brighter; while the actual condition existing at the present time, as reflected in the production of steel ingots, is still declining.

Judging by present indications, ingot production

will show a further decline in July that will carry it a little below normal and bring our adjusted curve to the lowest point since the latter part of 1924. Then following the upturn in the P-V Line, it will probably rise in August, or in September at the latest, and do so somewhat more rapidly than usual for the season. A material July reduction in the ingot output will make it apparent that, allowing for seasonal conditions, the production of steel has been in a general declining trend since the peak reached in August, 1926—a decline interrupted by a temporary "false" recovery last spring.

One characteristic of the recent trend of the P-V



The Gradual Upturn of the P-V Line (Representing the Ratio of Commodity Prices to the Physical Volume of Trade) Suggests Gradual, Moderate Recovery in Business, Particularly as Ingot Production Has Undergone Only Moderate Curtailment

Line is the prolonged flat bottom that the curve shows and the very gradual subsequent upturn. This suggests that the recovery in business that we anticipate will be but gradual and moderate. Moreover, as ingot production has undergone but a very moderate curtailment it seems reasonable to infer that the gain to be anticipated this fall will also be but moderate and not sharp as it was in the second half of 1924.

Building and Automobile Situation

THE trend of automobile production was decidedly downward in June, while building contracts apparently gained in that month. Both, however, were much below their peak levels, allowing for the seasonal factor, and both are likely to show totals for 1927 that will be below those for 1926.

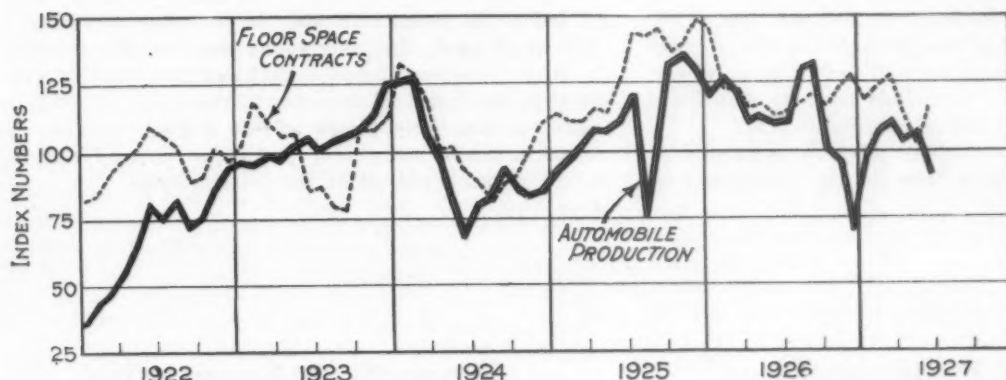
We say that the trend of building contracts was "apparently" upward because of the very mixed condition shown by the statistics of that industry. The June data indicate a continued recession in the building of houses, stores and office buildings at the same time that a gain appears in the engineering construction, such as roads, bridges and subways. Building permits in towns and cities continued to decrease, while construction contracts increased quite sharply. Contemplated new construction, as reported by the F. W.

while 24 per cent (a large proportion) were for public works and utilities. Contemplated new construction increased in the Northwest, the Southeast and Texas, but was lower than a year ago in the first two sections. There was a decrease in all others, including New York and New Jersey and the Middle Atlantic sections.

It continues probable that building in 1927 will be smaller in volume than in 1926, and it will be remembered that the 1926 volume was smaller than in 1925.

As to automobile production, the June output in the United States and Canada was 333,760 cars and trucks against 422,100 in May and 405,500 in June, 1926. Thus there was a decrease that was much greater than usual and our adjusted index fell to only 91 per cent of the average for the years 1921-1925, in comparison with 107.1 in May and 111.3 at the peak of the year in March. Aside from a few companies, such as General Motors and Hudson, the business appears to be only poor to fair and the Ford situation remains a very disturbing factor. The total production for the first six months of this year has been 12 per cent under the same period in 1926, which is the more significant in that the trend was downward during the first half of last year.

Fair gains in both building and automobile production are not improbable during the second half, but the



Fair Gains in Both Building and Automobile Production Appear Probable During Second Half of 1927, But Both Are Likely to Show Totals for 1927 Below Those of 1926

Dodge Corporation, declined. Even the lettings of structural steel were considerably smaller in June than in May in spite of one more working day last month.

Our index of contracts awarded (sq. ft.), adjusted to eliminate the merely seasonal changes, in June was 115.6 per cent of the average for 1921-1925 against 102.5 in May and 114.1 a year ago. It is to be remembered, however, that June, 1926, was the low point last year and was considerably under June, 1925.

The value of contemplated new construction shows an adjusted index of 125 in June, against 135 in May and 139 a year ago, and this is the first time that the trend has been so sharply downward since 1924.

Most notable, however, is the decline in building permits. According to *Bradstreet's* report, the permits in June were 13.3 per cent under those of a year ago and in the first six months of the year were 8.7 per cent lower. The S. W. Straus & Co. figures covering a larger number of cities were 15 per cent lower than in June, 1926, and that company reports that there is less potential building in cities even than in the summer of 1924.

A study of the situation in different sections of the country shows that contracts were larger only in the Middle Atlantic States, including New York and New Jersey, and in the Central West, and that the June increase in the Middle Atlantic States was due chiefly to a few large contracts for roads, a subway, and a theater and office building. In fact, declines in contracts occurred in the larger number of sections, including New England, Pittsburgh territory, the Northwest, the Southeast and Texas. Only 38 per cent of the total contracts were for residential building,

output for these two important steel consuming industries tends to confirm the impression that only a moderate recovery in the steel industry is in sight.

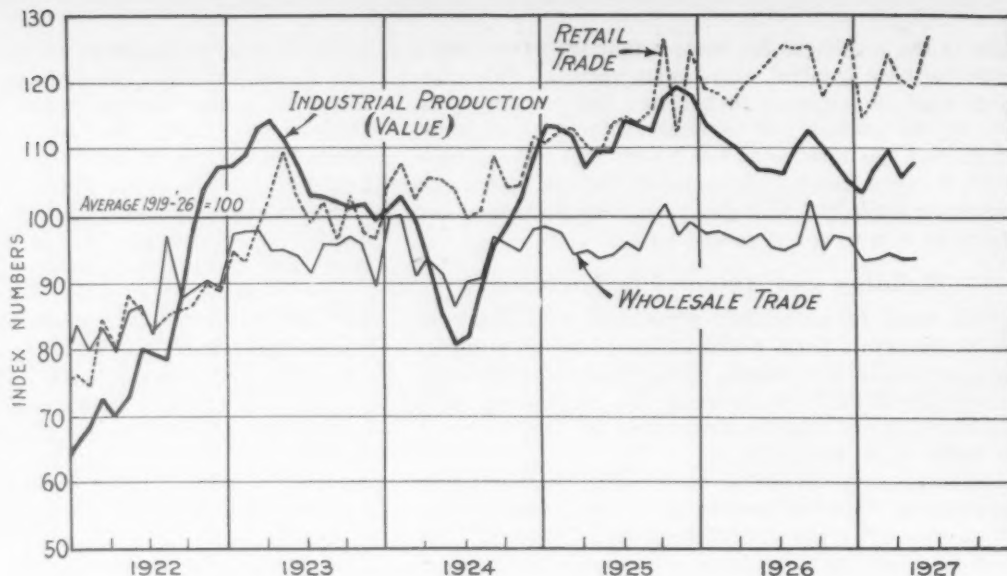
Retail Trade at a New High Level

ONE of the most encouraging facts continues to be the sustained large volume of retail trade. Our index, which makes due allowance for the merely seasonal changes, rose in June to a new high for the year. The preliminary June index is 127 against 119.1 in the preceding month. It compares with 123.6 a year ago. Thus retail sales have regained peak levels, rising from a low of 114.5 in January. These figures are all percentages of the average for the eight years 1919-1926, and thus indicate a truly high level. In fact, even if allowance be made for the long-time trend or growth of retail sales, the index is well above the indicated normal.

All this means that at present prices people are both able and willing to buy food, clothes, hardware, drugs, and the thousands of articles sold at retail. Their purchasing power must be large and as long as this condition continues, there is no question of a serious recession or depression in industry. The most that is required is a readjustment in the output of manufactured articles or raw materials in those cases where the industry is out of line.

While consumers are buying, there will be a demand for the products of industry and for the activity of the plants and equipment required to turn out those products. The only caution to be observed is that, while in 1924 and 1925 retail trade was increasing, during the past year it has made no net gain. Consequently the

Retail Trade Rose in June to a New High Peak and Indicates a Large Aggregate Purchasing Power. It has made no net gain in a year, so presumption is that existing plant capacity is adequate for all consumer wants



presumption is that the existing plant capacity is adequate to supply all consumer wants and that the production of plant and equipment cannot safely be expanded. This indicates that industrial building and the production of machinery should in general be limited to replacement requirements.

Wholesale trade continues to average below the level of recent years, but this is doubtless due in large part to the declining importance of the jobber or wholesaler as a middleman. There has been no significant change in the level of wholesale sales this year.

As to industrial production, when it is figured at current price levels, it is seen by the accompanying

chart to be considerably below the peak reached toward the close of 1925 and well below the level of retail sales. While further recession is probable, we conclude that prices and the volume of output have made much progress toward the desirable readjustment and that with the present large volume of retail trade the total value of industrial production may be expected to increase in a short time. The only sound way for this increase to occur, however, lies in a continued restraint in production which will allow prices to rise to a point where sales (output times price) will be larger. This would mean a larger margin of profit per unit of output, which is much needed at the present time.

Steel Barrel Production Large in June

Production of steel barrels in June totaled 594,782 units against 588,077 in May, according to reports received by the Department of Commerce from 28 companies operating 32 plants. On the basis of 25 working days, 53.1 per cent of the total monthly productive capacity was used during June, compared with 52.2 per cent in May. Except for last April, with 599,771 barrels, June saw the largest production since last July.

Shipments in June represented 605,123 barrels, compared with 575,712 in May. Stocks at the end of June included 52,094 barrels; at the end of May, 62,435 barrels. Unfilled orders for delivery within 30 days at the end of June represented 232,468 barrels, against 250,029 at the end of May; while orders for delivery beyond 30 days were 966,371 and 947,865 barrels, respectively.

Shipments of the members of the Steel Barrel Manufacturers' Association totalled 362,673, of which all but 1350 were for domestic use. Capacity was occupied to the extent of 49.9 per cent rating; 25.1 per cent of I. C. C. capacity and 56.9 per cent of light barrel capacity. The business of the members in the month as given is \$1,100,553. Unfilled orders on July 1 were for 719,870 units.

Further Slight Recession in Wholesale Prices

Continuing the steady downward movement of many months, the June index of wholesale prices of the United States Bureau of Labor Statistics stands at 143.7, compared with 144.1 in May. This decline has persisted without interruption since the 150.5 of last September. It was 152.3 in June, 1926. Except for an occasional temporary setback, the decline has proceeded for more than two years, from 161 in March, 1925. The present figure is the lowest since April, 1922.

As usual, metals and metal products stand far below the general average. This group was at 121.7 in June and 120.6 in May. These figures compare with 125.1 a year ago. Clothing materials and building materials are highest of all items, both being between 164 and 170. House furnishing goods and fuels are at about 158 each. All other groups are below the general average, with the exception of foods, which stand at 146.4 in June.

The Concrete Reinforcing Steel Institute will hold a semi-annual meeting, Sept. 19 to 21, at the Aviation Country Club, which is located 30 miles from Detroit.

Schedule of the next installments of the Business Analysis and Forecast, by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows: Aug. 11—Activity in Steel Consuming Industries; Aug. 18—Position of Iron and Steel Producers; Aug. 25—General Business Outlook.



LOADING a Barge with Pig Iron for shipment from East St. Louis to Ohio River Points

MOVE PIG IRON BY RIVER

First Water Shipment from St. Louis in Nearly Half a Century

RIVER transportation of pig iron from the St. Louis industrial district has been revived by the St. Louis Gas & Coke Corporation, Granite City, Ill. This producer plans ultimately to operate its own fleet of towboats and barges so as to take full advantage of the possibilities for shipping by water, according to M. D. Curran of St. Louis, vice-president of the company.

Within the last month the Granite City furnace has shipped more than 2000 tons of pig iron to Ohio River points via the Mississippi and Ohio rivers, this being the first time in nearly half a century that this commodity has been transported from St. Louis by river.

For the shipment of pig iron the company used barges which had brought coal from West Virginia mines for conversion into coke. By this arrangement the necessity of sending the barges back empty was obviated.

"The development of river transportation is but another step in our efforts to take full advantage of the natural resources in the St. Louis district," explained Mr. Curran. "We are using coal from mines in southern Illinois and ore from the Missouri fields. Now we are using the water transportation facilities that are at our gates.

"The saving in freight on river shipments of pig iron to Ohio River points as compared with the railroad movement is \$1.13 a ton, which enables us to meet competition at points we had never been able to reach before on account of prohibitive railroad rates. It opens new territories to us, and we intend to take full advantage of our location.

"Water transportation of pig iron is growing in importance because of the high freight rates, and the time will come when the makers of this commodity will not be able to exist unless their furnaces are located so that they will be able to ship by water. Mining and manufacturing costs are now so low that we can expect but little further improvement. Our waterways must be utilized if we are successful in making further reductions in cost to the consumer."

The docks used by the St. Louis Gas & Coke Corporation are located at East St. Louis, Ill., across the river from St. Louis, and are three miles from the company's plant at Granite City, whence cars containing the pig iron are switched.

The barges are about 275 ft. long, with a beam of about 60 ft., their capacity depending upon the stage of the rivers. For the present they are being loaded with about 1000 tons of coal for shipment down the Ohio River and with 500 tons of pig iron for the up-river movement. Their draft is a maximum of 4 ft. The Ohio River is at a low stage, but when the locks in that stream are completed, it will be possible to load the barges to draw 8 or 9 ft. of water.

No Reconsideration of Gulf Port Import Rates on Steel

WASHINGTON, July 26.—The Interstate Commerce Commission has denied a petition of the Chamber of Commerce at Kansas City, Mo., and others for reconsideration of the recently decided case regarding import rates on steel products through Gulf ports.

"Forward Atlanta" Movement Added 169 Industries

What is known as the Forward Atlanta campaign, a movement started by the Chamber of Commerce of that city in July, 1925, and carried on by the Forward Atlanta Commission, is the subject of an unusual publication. It is in quarto form, with a heavy cover of leather-grain paper, on which the successive stages in Atlanta's development are pictured in color. The text is the story of the organization of the business forces of Atlanta in a memorable effort to give the widest publicity to the city's position as the great manufacturing and distributing center of the South. A fund of \$268,000 was raised in four days and this was so effectively

used that in 1926 no less than 169 new industries located in Atlanta, bringing payrolls estimated at \$7,723,750 and employment to 4909 persons. For a three-year movement beginning with 1927, the fund pledged is nearly four times that for the preceding two years, or roundly \$1,000,000. The record is unique in city propagandizing. In its scale of operations, the talent brought to bear on the problem, and the substantial character of the results, the movement will take a high place in the annals of American city promotion. This flat volume contains 40 pages, many of them given up to reproductions of the advertising so effectively marshaled to win friends for the gateway city.

Estimates are that 9,992,580 freight cars will be required to handle 27 of the principal commodities in the third quarter compared with 9,576,383 cars for the same months in 1926, according to the Car Service Division of the American Railway Association, based on studies of the 13 Shippers Regional Advisory Boards which now cover the United States. A 5 per cent decrease is expected in iron and steel and 1.8 per cent in castings and machinery.

ARMCO EXPANSION

Details of American Rolling Mill Purchase of Columbia Steel

The purchase by the American Rolling Mill Co. of the plants and business of the Columbia Steel Co., as briefly reported in the issue of July 21, page 157, is confirmed by the following statement issued by George M. Verity, president American Rolling Mill Co.:

The American Rolling Mill Co. has acquired the property, plants, business and patents of the Columbia Steel Co. and the Forged Steel Wheel Co. at Butler, Pa. and Elyria, Ohio. These properties add another complete manufacturing unit, from pig iron through to finished product, to Armco's producing forces.

The Forged Steel Wheel Co. has a capacity of some 10,000 tons per month of forged steel wheels. They make a special high grade railroad car wheel.

The Columbia Steel Co. has worked out at Butler, Pa., a continuous strip mill to produce sheets in strip form (stripsheets) up to 36 in. in width. It employs both a hot and a cold rolled process in the plan of manufacture. The company was the first to work out this particular scheme of mechanical operation, just as Armco was the first to develop and put into practical operation a continuous sheet mill at Ashland, Ky., now some three years ago. The Columbia company has protected its development by process and device patents in a manner very similar to what Armco did in its earlier development.

This amalgamation brings together under the banner of Armco these two outstanding developments which cover the only known means of a purely mechanical operation in the manufacture of sheet metal, either in the form of sheets or strips. This gives ARMCO control of at least 1,000,000 tons per year of finished product of the highest grades with which to protect the exacting needs of its ever growing number of clients.

The Columbia Steel Co. will, for a period as yet undetermined, be operated as a separate company, but the entire product will be sold by Armco.

The Columbia Steel Co. is a consolidation formed in March, 1926, of a company by the same name which had been operating cold-rolled strip mills at Elyria, Ohio, since 1902, and the Forged Steel Wheel Co., at Butler, Pa., a subsidiary of the Standard Steel Car Co.,

(which numbers among its directors W. L. and R. B. Mellon, of Pittsburgh). In May, of this year, was effected the purchase by the American Rolling Mill Co. and the Koppers Construction Co., (the latter company including among its directors R. B. and R. K. Mellon) of the Hamilton blast furnace property at Hamilton, Ohio. In the new blast furnace company, the Hamilton Coke & Iron Co., as announced on page 1434 of THE IRON AGE of May 19, the Armco and Koppers companies each have a half interest.

The Columbia company in securing the Forged Steel Wheel plant obtained a steel-making property having ten large basic open-hearth furnaces and was afforded an opportunity to build the remarkable strip sheet mill which was described in these columns May 19 and which has a capacity of some 35,000 tons of sheets a month.

The Ashland, Ky., development of the American Rolling Mill Co., of rolling sheets by a continuous high production process, was described in THE IRON AGE of June 16. This development, in the words of President Verity, "has changed the whole industrial situation as affecting the manufacture of iron and steel sheets and light plate." What the capacity is in finished product that now comes under the control of the Armco organization is mentioned in the announcement quoted above in full.

Buys Extensive Electrical Equipment for Continuous Strip Mill

The American rolling mill Co. has placed an order for approximately \$700,000 worth of electrical equipment with the Westinghouse Electric & Mfg. Co., according to a statement issued by the Westinghouse company. The order covers complete electrical equipment for a continuous hot strip mill in the Middletown, Ohio, plant and represents the most heavily powered continuous sheet mill now running or under construction. Included in the order are four alternating current motors totaling 3800 hp., eight direct-current motors totaling 18,150 hp., six motor-generator sets, delivering a total of 13,800 kw., or approximately 18,500 hp. of direct current and a switchboard of approximately 120 panels to accommodate control apparatus.

Blaw-Knox and Milliken Brothers Consolidate

Plans for a merger have been arranged by the Blaw-Knox Co., Pittsburgh, manufacturer of steel products, and the Milliken Brothers Mfg. Co., New York, specializing in the production of standard steel buildings, radio and transmission towers. The consolidation will become effective on Sept. 1, and will be carried out both for the development and promotion of domestic and foreign trade.

The Milliken company comprises a reorganization of the former Milliken Brothers, Inc., iron and steel contractors, formed in 1857; a number of years ago, the company acquired property at Arlington, S. I., and constructed a steel fabricating plant; later, through financial difficulties, this project was abandoned and receivership ensued. The present Milliken organization is the outcome of that action. During the war period the Staten Island plant was acquired by the Downey Shipbuilding Co., and converted for a shipyard; within the past few weeks it has been taken over by the Bellanca Aircraft Corporation of America, Inc., for airplane and seaplane production.

In taking over the Milliken company, its patents, assets, etc., the Blaw-Knox organization will add and amalgamate the products now being sold under the Milliken name with its well-known line of similar specialties, including standard steel buildings, steel transmission towers, steel bins, buckets and other heavy equipment, concentrating operations at its plant at Blawnox, near Pittsburgh, as in the past. In recent years, the Milliken company has not operated a fabricating plant, having its products manufactured at the mills of independent fabricators.

The Blaw-Knox Co. will continue with its present organization to handle domestic business and the acqui-

sition of the Milliken company will make no change in this line. For foreign operations, it is expected to make a combination of the two company names, likely as Milliken-Blaw-Knox, and business of this character will be under the direction of the present Milliken organization, which will act primarily as a sales company for the combined interests in foreign fields. Present officials of the Milliken company will continue with the consolidated organization, and offices will be removed from 26 Park Place to those of the Blaw-Knox Co., 30 East Forty-second Street, New York.

Operations of Nickel Corporation Reduced

TORONTO, ONT., July 26.—The International Nickel Corporation is reported to have only two of its seven blast furnaces at Port Colborne, Ont., in operation at the present time. Four blast furnaces that were built during the war are down for reconstruction. When this has been completed that capacity of the four furnaces will be increased by 50 per cent. It is understood that stocks of matte, which had been accumulating gradually, are now being reduced while the furnaces are down. While those in close touch with the property insist that there has been no slowing up in mining operations, it is believed that recent output was ahead of demand and, consequently, more attention is being given to development and less to production.

The Machinery Club of Chicago has opened its new quarters at 671 West Washington Boulevard. The club has been entirely refurnished and redecorated and various new conveniences have been installed to meet the needs of the machinery, tool and allied industries in Chicago.

Plant Visitations During Detroit Steel Exposition

Plant visits have been arranged for those who attend the ninth annual National Steel & Machine Tool Exposition, which will be held at Convention Hall, Detroit, the week beginning Sept. 19. The program provides for inspection during every afternoon of the week with the exception of Monday, and an additional special trip is planned for Friday morning. The schedule is as follows:

Tuesday afternoon, Sept. 20: Cadillac Motor Car Co.; Dodge Brothers, Inc.; Budd Wheel Co.; Detroit Steel Products Co.; Detroit Copper & Brass Rolling Mills (succeeded by American Brass Co.).

Wednesday afternoon, Sept. 21: Lincoln Motor Co.; Hudson Motor Car Co.; General Motors Research Laboratories; Detroit Seamless Steel Tubes Co.; Victor-Peninsular Co.

Thursday afternoon, Sept. 22: Ford Motor Co., River Rouge Plant; Chevrolet Motor Co.; Barnes-Gibson-Raymond, Inc.; Fisher Body Corporation; Park Chemical Co.

Friday morning, Sept. 23: Packard Motor Car Co.; Ford Motor Co., Highland Park plant; Parke-Davis Co.; Michigan Malleable Iron Co.

Friday afternoon, Sept. 23: Ford Motor Co., Fordson plant; Studebaker Corporation; General Motors Corporation proving grounds; Detroit Edison Co., Trenton Channel plant.

Power Sales Show Increase in New England Industries

A study of the sale of power to primary customers of the New England Power Association during the first six months of 1927, as compared with identical customers in the same period of 1926, shows that there has been a gain of 3.32 per cent. The analysis was made only of those customers which received power for the full six months in both years. It therefore is an

accurate indication of conditions in the various groups as determined by their own state of business.

The public utility companies purchasing power increased their consumption by 5,864,000 kwhr. or 5.65 per cent, and the industrial customers by 4.23 per cent. The railroad companies show considerable decrease, amounting to 13.22 per cent, although the total amount of power involved is small as compared with the other two classes. The railroad decline is the direct result of the abandonment of unprofitable interurban trolley lines and their replacement by motor buses.

In the main groups of the industrial class, power consumed in the metal industries increased only 0.94 per cent, from 45,696,000 to 46,125,000 kwhr.; paper 3.35 per cent, from 28,601,000 to 29,560,000 kwhr.; and miscellaneous 3.70 per cent, from 8,742,000 to 9,065,000 kwhr. The rubber industry fell off 3.73 per cent, from 8,100,000 to 7,793,000 kwhr. The most significant figure is that for textiles, which in New England have been in the doldrums. The increase in power consumed, in identical mills, was 8.60 per cent, from 56,003,000 to 60,819,000 kwhr.

Oil Burner Men Discuss Problems

At the quarterly meeting of the board of directors of the American Oil Burner Association, held in New York, the major factors affecting the future of the oil-heating industry were presented and discussed. Among these were the settlement of patent litigation within the industry, proposed coordination of State laws and regulations affecting oil heating for domestic and industrial purposes, similar standards of installation methods in all communities, and advertising of oil-heating devices and equipment on a national scale in local newspapers of cities and communities.

COMING MEETINGS

August

Ohio-Cleveland Industrial Exposition. Aug. 6 to 28. Public Auditorium, Cleveland. W. R. Boyd, Hollenden Hotel, Cleveland, chairman.

Ohio State Foundrymen's Association. Aug. 19 to 20. Annual convention, Cedar Point, Ohio. Arthur J. Tuscany, 5713 Euclid Avenue, Cleveland, secretary-manager.

Empire Mining and Metallurgical Congress. Aug. 22 to Sept. 20. Second Empire congress, meetings held at various places in Canada. R. O. Wheatley, 627 Drummond Building, Montreal, associate secretary.

American Society of Mechanical Engineers. Aug. 29 to 31. Regional meeting, Seattle. Calvin W. Rice, 29 West Thirty-ninth Street, New York, secretary.

Canadian National Exhibition. Aug. 31 to Sept. 2. Steel and power show and technical sessions, University of Toronto Arena, Toronto. C. Bradshaw, 153 University Avenue, Toronto, general chairman.

September

American Electrochemical Society. Sept. 4 to 20. Fall meeting, Northwestern trip starting from Chicago. Colin G. Fink, Columbia University, New York, secretary.

New Haven Machine Tool Exhibition. Sept. 6 to 9. Seventh annual exhibit, Mason Laboratory, Yale University, New Haven, Conn. Harry R. Westcott, 400 Temple Street, New Haven, Conn., chairman exhibition committee.

International Foundry Exhibition and Congress. Three weeks in September. Exhibition at Parc des Expositions, Paris. Comité d'Organization, 8 Rue de la Victoire, Paris, France.

International Congress for Testing Materials. Sept. 12 to 17. Amsterdam, Holland.

American Refractories Institute. Sept. 15. Fall meeting, Clifton Hotel, Niagara Falls, Canada. Dorothy A. Texter, 2202 Oliver Building, Pittsburgh, secretary.

Concrete Reinforcing Steel Institute. Sept. 19 to 21. Semi-annual meeting, Aviation Country Club, 20 miles from Detroit. M. A. Beeman, Tribune Tower, Chicago, secretary.

American Welding Society. Sept. 19 to 23. Fall meeting, Book Cadillac Hotel, Detroit. M. M. Kelly, 33 West Thirty-ninth Street, New York, secretary.

National Machine Tool Builders' Association. Sept. 19 to 24. First national machine tool builders' exposition, Public Auditorium, Cleveland. E. F. DuBrul, 817 Provident Bank Building, Cincinnati, manager.

American Society for Steel Treating. Sept. 19 to 24. National steel and machine tool exposition at Convention Hall, technical sessions at Statler Hotel, Detroit. W. H. Eisenman, 4600 Prospect Avenue, Cleveland, secretary.

American Institute of Mining and Metallurgical Engineers, Institute of Metals. Sept. 19 to 24. Annual meeting, Statler Hotel, Detroit. H. Foster Bain, 29 West Thirty-ninth Street, New York, secretary.

Society of Automotive Engineers. Sept. 19 to 22. Production meeting, Sept. 19 and 20, Hotel Winton, Cleveland; Sept. 21 and 22, Book Cadillac Hotel, Detroit. C. F. Clarkson, 29 West Thirty-ninth Street, New York, general manager.

National Association Ornamental Iron and Bronze Manufacturers. Sept. 20 to 22. Annual meeting, West Baden, Ind. A. L. Graham, 195 Platt Street, Rochester, N. Y., secretary.

Iron and Steel Institute. Sept. 20 to 23. Annual autumn meeting, Royal Technical College, Glasgow, Scotland. G. C. Lloyd, 28 Victoria Street, London, S. W. 1, secretary.

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More on the Dwellings of Tomorrow

RECENT issues have contained additional articles respecting the use of steel for the structural members of dwellings and buildings of a size which until recently have not been regarded as affording a field for such steel applications. Illustrations of other cases of the adapting of steel for the framework of a house are shortly to follow. The special attention which THE IRON AGE has been giving to these "Dwellings of Tomorrow" is a recognition of an obligation to the reader to do everything reasonable to further the cause of the rational distribution of steel.

In the factor of rationality lies one element of caution. A new development collects enthusiasts, who are wont to rush in without a proper careful consideration of the practical matters. Promise of a roseate hue does not necessarily mean the summary passing out of what the new is supposed to replace. Keeping this fact in mind has lent much to the practicality of the contributions in these columns. One other such will touch on several little considered sides of steel house construction.

This Issue in Brief

Sees important commercial possibilities for sponge iron. It is conceivable that the future success of some large-scale leaching and precipitating processes for copper and lead ores may depend largely upon a supply of cheap sponge iron, Government report indicates.—Page 204.

June automotive output 21 per cent under May. The number of vehicles made in United States and Canada was 333,760, compared with 422,100 in May and 405,500 in June, 1926.—Page 219.

Sustained retail purchasing power forecasts an early gain in total value of industrial production, Dr. Haney indicates. As long as retail purchasing is heavy there is no question of a serious recession in industry. In fact, the volume of retail trade suggests an increase in the total value of industrial production in a short time.—Page 220.

June statistics show conflicting trends. Malleable casting output was 2 per cent under May (page 216), and bookings of fabricated steel plate fell off almost 30 per cent (page 216), but orders for steel castings gained 25 per cent.—Page 216.

Wholesale prices still falling. June index was 143.7, compared with 144.1 in May and 152.3 in June, 1926.—Page 220.

Department heads' efforts to beat par result in marked reductions in cost. By dividing the normal hours of operation in each department by the total fixed charges (indirect labor, supplies, power, etc.) a machinery builder has established a standard burden rate for each department. This gives the department head a mark to shoot at, and if the monthly report of actual expenses compares unfavorably with par, he soon learns why.—Page 196.

Is the demand for steel really as seasonal as is generally assumed? In the old days hot weather meant smaller output, but now blast furnaces and open-hearth furnaces are put in and out as the order books dictate. Then there were alternate periods of feast and famine; now we have hand-to-mouth buying, greater diversification in the consuming industries.—Page 226.

Our iron and steel export business for first half of year is 10 per cent higher than same period of 1926. But June tonnage exported was 9 per cent under May.—Page 217.

Cuts idle time of machine operators 80 per cent by using green signal light. When an operator rings in on an idle time ticket, a green lamp above the timekeeper's desk is automatically lighted. Thus the foreman, superintendent or any other executive in the shop at the time is immediately made aware of the stoppage in production, and has the opportunity to right the trouble.—Page 197.

Slippage in passes is reduced by electric drive. Bourne-Fuller Co. finds that new blooming mill drive improves product, because there is a closer control of speed.—Page 204.

Bell hoists on new blast furnace are electrically operated. Each hoist has an equalizer, to which the main operating cable is attached. When the desired sealing pressure between the bell and hopper is reached, a limit switch stops the motor and sets the brake.—Page 199.

Budgets overhead expense for each department. Machine tool builder finds that standard burden system is so accurate that it can be used as a basis for budgeting.—Page 196.

"Increase fluorspar duty," say miners; "lower it," pleads steel manufacturer. Miners declare that foreign competition has forced the closing down of many fluorspar mines. Bethlehem Steel official urges that domestic deposits be conserved for emergency. He believes that import prices will soon be higher, due to exhaustion of low-cost supplies.—Page 205.

Install your budget control system now if you wish to have the "bugs" worked out of it by the first of year. Full benefits of budget control can hardly be realized at once. For six months to a full year the system is more or less experimental.—Page 213.

Solves problem of preparing soft metals for microscopic examination. Both polishing and former cutting methods scratch or "cold-work" the surfaces, making them unsuitable for metallographic examination. But cutting with a Jung microtome, which will successfully cut sections two microns in thickness, will leave the surface of the specimen in satisfactory condition for examination after etching.—Page 201.

Washed coking coal must be adequately dried or it will not "flow" satisfactorily from cars, bins and charging holes. The critical moisture point is about 5 per cent. Washing reduces the ash and sulphur content. One per cent less of ash in the coke reduces the cost of pig iron produced 20c. a ton, is claim made.—Page 202.

Domestic chromium ore mines have shut up shop. Not a ton was produced in 1926. All our supplies are now imported, as domestic supply of chromite is low grade and high cost. Southern Rhodesia and New Caledonia deposits, which are now supplying most of the world, seem ample for several years' requirements.—Page 197.

ESTABLISHED 1855

THE IRON AGE

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Backlogs and Prices

AN important sales official in a large steel company asks the attention of THE IRON AGE to one phase of the situation which has grown out of "the failure of sales executives to properly relate the value of their products to the demand which, while only conspicuous from day to day, has been sufficient to break practically every record for an eighteen months period."

Our correspondent would have sellers of steel "appreciate that the value of steel products today should differ in no respect from the value which is reinforced by a backlog, and that the backlog which once seemed to give stability to the market was worth no more than the necessary fundamental conditions." And further:

"Inasmuch as this small-lot or controlled buying has been with us for a considerable period and will probably continue, is it not time that the seller place a value on his products in keeping with the demand of to-day, instead of permitting his price to be influenced by possible lack of new bookings tomorrow?"

"In other words, it seems to me that the seller must fight it out on a day-to-day basis and reinforce his judgment daily by the assurance that this great country must have the products of our industry and that the weakness which seems to exist by reason of no backlog will continue to vanish with the coming of tomorrow.

"One does not have to be an optimist to convince himself that he would be extremely unwise to sell his country 'short'; but it appears that we have been selling our most important basic commodity short because so many people in the industry have failed to translate properly the new order of buying."

In previous comment on this subject THE IRON AGE has suggested that the difficulties of sellers of steel have been increased by the ban put on "Pittsburgh plus", for there is no longer the clear-

cut price level that so long obtained. We have pointed out also that backlogs differ in their sustaining power. When consumption requirements are running ahead of capacity, or buyers think they are likely to do so, we have a natural backlog, one which tends to advance prices. On the other hand, where an artificial backlog is secured by price cutting on the eve of a general effort of producers to get the market up, such as we have seen now and then in the past two years, notably in the early weeks of 1925, the seller really encourages the buyer to sit out all the later effort to make paper advances actual.

But whether we speak of a natural backlog or an artificial backlog, neither variety need be expected to figure in any important way as an influence upon prices in the months which buyers and sellers now seek to forecast. What is of more moment to sales executives of steel companies—and of manufacturing consumers of steel as well—is how to convert the steady flow of orders for their respective products into a more confident attitude on prices.

Is Steel Demand Seasonal?

IN all its history the steel industry has shown remarkable facility in departing from precedents, hence one does well to question whether steel demand, in its total volume, is really seasonal as is commonly assumed. We know the idea is fixed that it is, but is the thing itself fixed? If so there ought to be an adequate explanation of the phenomenon.

In the old days, when there were great buying movements, the steel mills were alternately over-filled with business and lacking in orders. Then nature took her course. High humidity cut down the output of the blast furnace, and mills did not perform so well. Furnaces were not blown in and out with the present facility and the season did make a difference, acting directly upon the producing units. Today, blast furnaces and open-hearth furnaces are put in and out as the state of order books requires.

Thus it is merely a coincidence that the old seasonal course and the recent seasonal course are much the same. The causes or influences are different.

It may be argued that workmen do not perform so well in hot weather, and take vacations, but one must remember that there is a continuous season of outdoor work, with months between seasons, while July and August fall in the middle of the most active construction season. It is difficult to fancy that the season is cut into two parts, with a midsummer interval.

If reduction of stocks be urged as a factor, there is the point that the habit of taking a June 30 inventory in addition to a Dec. 31 inventory has become widespread, and by that token one would expect buyers to curtail their receipts for May and June and increase them for July and August.

The fact that in numerous lines the actual ultimate demand or consumption of steel products is seasonal shows nothing in itself, because those seasons vary—refrigerators against stoves, for instance—and because in different commodities there is a wide range of time from the manufacture of the steel to the delivery of the goods into the hands of the final consumer. There would be too much overlapping to produce a strong swing for the aggregate.

If one proceeds to study individual situations, involving important tonnages, he finds few cases and many exceptions. Consider the automobile. While the monthly production statistics do not show the same swings from year to year, a careful study suggests that the tendency is for May, June and July production to run no more than a few per cent, perhaps not 5 per cent, above August, September and October production. A month's interval from production of the steel ingot to production of the automobile is a reasonable assumption for the average. Taking the same periods in shipments of fabricated structural steel, in which there are official reports for three years past, one finds 1 per cent decrease in 1924, 5 per cent increase in 1925 and 2 per cent increase in 1926. The average is 2 per cent increase, but the important thing is that practically no seasonal swing is shown.

In the old days car scarcity in October, approximately, from crop movement and particularly heavy coal movement, produced freight car orders, but of late there has been nothing noticeably seasonal about freight car buying. In rails for replacement one does find a season, the first half of the year, but such rails constitute only about 5 per cent of a year's steel production.

All told, then, we are depending much more on habit or precedent than upon detailed knowledge for the view that steel is seasonal.

Why Automobiles Are Cheaper

WHILE one of the leading automobile plants required 17,000 workers in 1916 to turn out 650 cars a day, the present force of the same plant is approximately 15,000 and has no trouble in turning out 1500 cars a day. Worked out in another way, this means that in 1916 it took 26 man-days for each car, against 10 man-days under present conditions.

Installation of machinery for cutting down both

time and labor, employment of mechanics and department heads specially trained in the work, proper routing of manufacturing operations through the plant, modern equipment for handling materials, and more exact methods of manufacture through the use of more accurate machines, all taken together, account for this great improvement in performance.

There is also the fact that the earlier methods involved a waste of material, which today would be regarded as unconscionable. One automobile official observes that a dozen years ago the waste in many of the materials purchased for making a car was almost as great as the amount of such materials finally incorporated in the car.

Coke Stocks Not Liquidated

ON April 1 there was some doubt whether any substantial stocks of coke had been accumulated by consumers in anticipation of the union bituminous coal suspension. It was very well known that there were large stocks of bituminous coal, afterward reported by the Bureau of Mines at 75,000,000 net tons, besides several million tons of floating supply, on track.

Coke and pig iron production statistics now available indicate clearly that there was a large stock of coke April 1. Relative to pig iron, there was very large production of coke in the first quarter of this year and rather light production in the second quarter. Roughly speaking, and as an introduction to a more detailed study, it may be said that coke production in the first quarter was one-fourth in excess of normal. Production of coke as reported by the Bureau of Mines and production of coke pig iron as reported by THE IRON AGE have been as follows:

Coke Production—Net Tons		
	1926	1927
First quarter.....	14,022,000	17,440,000
Second quarter.....	13,610,000	12,084,000
Half year.....	27,632,000	29,524,000

Pig Iron Production—Gross Tons		
	1926	1927
First quarter.....	9,681,602	9,527,861
Second quarter.....	10,166,859	9,902,817
Half year.....	19,848,461	19,430,678

Obviously these figures do not hang together. From the first quarter of 1926 to the first quarter of 1927 there was an increase in coke production of 24.4 per cent, while there was a decrease of 1.6 per cent in pig iron. Comparing the second quarters, on the other hand, one finds a decrease of 11.2 per cent in coke with a decrease of only 2.6 per cent in pig iron.

The case is even stronger than the figures show, for the reason that in the early weeks of 1926 there was much production of coke as domestic fuel, on account of the anthracite suspension, with no similar influence this year. Comparing the half years, an increase in coke is seen, with a slight decrease in pig iron. Evidently a large part of the coke accumulated in the first quarter of the year is still on hand.

The variation in the two years occurred in by-product rather than in beehive coke. While in June by-product production was much the same in the two years—3,610,000 tons for 1926 and 3,598,000 tons for 1927—the January figures were 3,804,000 tons for 1926 and 5,316,000 tons for 1927.

Beehive production last January was lighter than production in the preceding January, which reflected the anthracite suspension. Production of beehive last month, 577,000 tons, was the smallest since July, 1925.

Depreciation by Obsolescence

VALUATION of capital goods, in the economic sense, is always a difficult matter even when it be only an engineering and commercial affair. It is far more difficult, even intricate, when it is a political affair, that is to say, one that involves the owner in relation to the public. This is evinced by the great mass of legislation, legal controversy and judicial decision that is being built up on this subject.

The National Association of Cotton Manufacturers recently cited an instance, in showing the tax burden on cotton mills in Massachusetts, that illustrates the difficulty and complexity. Two mills were assessed for an aggregate of \$9,450,000. On the books of the companies they stood at \$8,181,726. The report does not say, and we introduce the remark, that an engineering estimate of reproduction cost would have doubtless given a different value, while an engineering-economic estimate on the basis of expected earning capacity would surely have given something quite different still. The two mills were sold and brought only \$1,200,000, which may certainly be considered as having been their market value. Whether this included elements of capitalization of expected but diminished earning capacity, or of nuisance value, or of junk value, or some of each, we do not know.

It may be assumed that these mills were in good working order but that the competition of mills in the South had deprived them of their former earning capacity and left them with no prospect of its restoration. Consequently, no matter how much material and machinery remained in their construction and equipment its value had largely vanished.

This is not a unique experience. It is an obsolescence from industrial, geographical change, but it is an extinguishment of value just as surely as is disappearance by physical decay. It would be a waste of breath, however, to preach this doctrine to the average legislator or tax gatherer.

Inter-City Accident Contests

THE general plan of the industrial lost-time accident contest which for the last ten years has been carried on in Worcester, Mass., under the direction of the local Safety Council, has been taken up by the National Safety Council as a national movement and has already been put in operation in important industrial cities. These include, beside Worcester, Providence, Syracuse, Rochester, Pittsburgh, Cleveland, Detroit, Toledo, Grand Rapids, Chicago, Chattanooga, Memphis, St. Louis and Kansas City.

A standard basis of reckoning lost time resulting from accidents has been adopted, including mathematical formulæ for determining accident frequency and accident severity. These are all included in a summary report blank, which is in use

among all the firms now included in the contest, the number of employees running into hundreds of thousands.

In Worcester the lost-time accident contest has been the chief cause of a great reduction in the percentage of accidents in the works participating. The estimate is that the number of accidents has been cut in two in the ten years and the average seriousness as measured in lost time has been much diminished. When it is said that not more than half as many women and men now pay the penalty of their own or another's negligence or carelessness, the result is highly impressive.

Formerly the Worcester system of determining frequency and seriousness of accidents contained one flaw. It was based upon the average number of employees per plant per month, not taking into account that one establishment might be working overtime while another was on part time. Under the plan which has now been adopted for Worcester as well as for the other cities in the new movement, the basis of frequency is the number of lost-time accidents per 1,000,000 hours worked, and the basis of severity is the number of days lost per 1000 hours worked.

A lost-time accident is one from which an employee loses at least one day besides that on which the accident occurs. Each day so lost is included in the severity column. In addition the National Safety Council has adopted a scale of time charges for death and permanent injury, which is based upon the tables used in the operation of workmen's compensation laws. Each such injury causes a certain number of days to be added to the lost time total, this number depending upon the nature of the maiming. For example, a death, permanent total disability, or the loss of both eyes must be charged against a plant with 6000 days lost, representing 100 per cent. Other maiming injuries are considered in percentage of this total. An arm above the elbow is a 75 per cent disability, chargeable with 4500 days; a dismemberment below the elbow, 3600 days, and so on down to the loss of a finger, which counts as 5 per cent or 300 days.

It is fortunate that Worcester, a representative manufacturing city of medium size, with a vast variety of industry, should have had its long experience under the stimulus of the industrial accident contest. Between 40 and 50 plants, some very large and others small, have been competing in the effort to reduce accidents to a minimum. Each month the public is told, through the daily press, which works have achieved clean accident records. Quite naturally owners wish their own plants to figure in the honor roll, as it is called, and when they fail to do so demand to know the reasons why.

Broadening the contest to include other cities, some of which are comparable with Worcester, in the nature of their industries, should bring out illuminating comparisons. If the Worcester plan has worked as well as it is claimed it has, then, in competition with other cities to which the plan is new, its accident showing should be very much better. Providence or Syracuse, for example, comparable cities, in the early part of their entrance into the contest, should be at a disadvantage. But if this should be the case, their reduction in accident frequency and severity should be correspondingly greater as time goes on.

EXPANSION IN RUSSIA

Soviet Union to Rebuild Metal Plants Along American Lines

The Amtorg Trading Corporation, 165 Broadway, New York, official purchasing representative in the United States of metals and machinery for the Soviet Union, announces that plans are being completed for an intensive development of the Russian metals industry along American lines, which will cost approximately \$300,000,000. A delegation of six Soviet engineers, representing the Metal Institute at Leningrad, has just arrived in this country and will spend three or four months visiting American manufacturing plants of all sorts and consulting with American engineers on the proposed building program. It is probable, according to the announcement, that one or more American engineering firms will be engaged as consultants for the new construction, under an arrangement similar to that made with Col. Hugh L. Cooper for the Dnieper hydroelectric development or with Stuart, James & Cook, Inc., New York, for construction work in the Donetz Basin coal fields.

E. A. Rottenberg, spokesman for the delegation, in discussing the nature of the visit, said: "Our executives and technicians realize fully that of all the countries in the world the United States has the most to give us regarding the development of metal industries, and it is natural that the institute should be interested in extending its industry along American lines."

Six Plants Being Planned for Next Five Years

Among the iron and steel plants to be put under construction next year in the Soviet Union for which plans are being prepared by the Metal Institute are the following:

Magnet Mountain (Ural) plant. Annual capacity—600,000 metric tons of rolled iron and 60,000 tons of pig iron. Cost—\$60,667,000. To be completed in 1932-3.

Krivoy Rog (Ukraine) plant. Annual capacity—330,000 metric tons of rolled iron. Cost—\$41,715,000. To be completed in 1932-3.

Far-Eastern plant. Annual capacity—25,000 metric tons of pig iron and 20,000 metric tons of rolled iron. Cost—\$3,100,000. To be completed in 1929-30.

Kerch (Crimea) plant. Annual capacity—300,000 metric tons of pig iron and 230,000 metric tons of rolled iron. Cost—\$8,500,000. To be completed in 1929-30.

Providence plant. Annual capacity—120,000 metric tons of rolled iron. Cost—\$3,500,000. To be completed in 1928-9.

Kadiev plant. Annual capacity—330,000 metric tons of pig iron. Cost—\$4,000,000.

Construction of the new tractor plant at Stalingrad, planned by the institute to have an annual output of 10,000 tractors, is now under way, and according to Mr. Rottenberg, machinery valued at \$6,000,000 may be purchased in this country for its equipment.

The metal industry is the only manufacturing industry in the Soviet Union with an output still below the pre-war level. During the first six months of the current Soviet fiscal year (October 1 to March 31) the output showed an increase of about 40 per cent over the same period last year, and was about 75 per cent of the figure for 1913. During the current year about \$120,000,000 will be spent on major construction in the industry.

German Sheet Steel Piling Sold Here

Sheet Piling, Inc., 17 John Street, New York, has taken the following orders for Larssen sheet steel piling, made in Germany: 1700 tons for bulkheads and groins for the City of Miami Beach, Fla.; 850 tons for dock construction at Miami, Fla., and 500 tons for a dock at New Haven, Conn., for the United Illuminating Co. The head of Sheet Piling, Inc., is George A. Dix, formerly assistant general manager of sales of the Midvale Steel & Ordnance Co. and prior to that with the Carnegie Steel Co.

STEEL CORPORATION EARNINGS

Rate of \$11.20 Shown in First Half on Enlarged Common Stock

Earnings of the United States Steel Corporation for the second quarter were practically on a par with those of the first quarter. The net income, after allowing for the preferred stock dividend, showed earnings of \$2.78 per share of the now 7,116,235 shares of common stock, compared with \$2.81 in the first quarter. The first half, thus indicates earnings at the rate of \$11.20 per annum per share of common stock.

Income for the first half, before allowing for depletion and depreciation reserves and sinking fund and interest charges of Steel Corporation bonds, was \$91,625,000 this year and \$92,875,000 last year.

The common stock was kept, as expected, at the 7 per cent basis. The quarter's statement is as follows:

EARNINGS FOR SECOND QUARTER			
	Earnings Before Charging Interest on Subsidiary Companies' Bonds Outstanding	Less: Interest on the Subsidiary Companies' Bonds Outstanding	Balance of Earnings
April, 1927.....	\$16,124,761	\$674,796	\$15,449,965
May, 1927.....	16,238,178	671,986	15,566,192
June, 1927.....	15,692,696	668,393	15,024,303
	\$48,055,635	\$2,015,175	
Total earnings after deducting all expenses incident to operations, also estimated taxes, and interest on bonds of the subsidiary companies			\$46,040,460
Less, charges and allowances for depletion and depreciation, applied as follows:			
To depletion and depreciation and sinking funds on bonds of subsidiary companies			\$12,491,898
To sinking funds on U. S. Steel Corporation bonds			2,866,650
			15,358,548
Net income			\$30,681,912
Deduct: Interest for the quarter on U. S. Steel Corporation bonds outstanding			\$4,185,994
Premium on bonds redeemed.....			358,082
			4,544,076
Balance			\$26,137,836
Dividends:			
Preferred, 1% per cent.....			\$6,304,919
Common, 1% per cent.....			12,453,411
			18,758,330
Surplus for the quarter.....			\$7,379,506

Hudson Valley-Tutein Arbitration Deferred

Vacation plans have resulted in the postponement of arbitration in the case of E. Arthur Tutein, Inc., vs. the Hudson Valley Coke & Products Corporation, Troy, N. Y., until the middle of September. United States Senator Robert F. Wagner, who was appointed arbitrator for the Hudson Valley company, will sail for Europe about Aug. 1, to return about Sept. 13. Leo Oppenheimer, counsel for E. Arthur Tutein, Inc., is also going abroad, but has withdrawn as arbitrator for his client in favor of Sherman L. Whipple, Boston. The selection of a third arbitrator is necessarily deferred until the return of Senator Wagner.

The scope of the arbitration, which originally was limited to the contract of the Tutein company with the Hudson Valley corporation for the sale of pig iron and coke, has been expanded to include a contract between the same parties for the sale of coke by-products.

Inland's Net Earnings Gain

The Inland Steel Co.'s earnings for the second quarter show net profits after depreciation, interest and Federal taxes of \$2,215,093, equal, after preferred dividends, to \$1.72 a share on the 1,182,799 common shares. This compares with \$1,792,324 net, or \$1.36 a common share in the corresponding period of 1926. For the six months ended June 30 net income was \$3,996,019, or \$3.38 a common share, as compared with \$2.52 a share in the first half of last year.

Iron and Steel Markets

Betterment in Business Holds

Improvement in Heavy Tonnage Products—Favorable Signs
of Agricultural and Structural Demands—Eastern
Pig Iron Gives Way—Advances in Scrap

WHAT little change is discernible in the steel market is on the side of betterment. With some companies bookings are now comparable to those of early May. Mill operations have, if anything, slightly increased for the industry as a whole. Some additions to unfilled tonnage are reported from other than rail mills, to which have come lately some sizable orders.

Improvement is chiefly in the heavy tonnage products—plates, shapes and bars. Sales remain individually small but numerically somewhat greater. The strict adherence of buyers to week-by-week covering, while not making for satisfactory rolling schedules, lends assurance to the mills that stocks are low.

Among the chief steel consuming industries, the agricultural implement trade promises well, specifications from this source holding close to the gains of recent weeks. Structural steel activity continues at a high rate for midsummer, with expectations that July bookings by some large interests will exceed those of June, which was a good month. Demand from automobile builders is disappointing and is not expected to pick up before Aug. 15.

Prices of steel are well maintained in all markets, save that further concessions of \$1 and \$2 a ton in alloy steels have been secured in the Middle West on some of the more generally used grades.

Fabricated steel awards of 31,000 tons in the week included 6000 tons for a New York bank and office building and 3700 tons for a bridge at Panama City, Fla. Pending business was swelled by the addition of 23,000 tons, of which 4000 tons is for an office building in Houston, Tex., 3000 tons for a building in Minneapolis, 2500 tons for an apartment building in New York and 2000 tons each for business buildings in Philadelphia and San Francisco.

Among late rail purchases was 25,000 tons for the Northern Pacific, 15,000 tons to be rolled by the Illinois Steel Co., and 10,000 by Bethlehem.

Pig iron shows more activity at Cleveland, where sales totaled 50,000 tons, and at New York and Buffalo, where bookings of 15,000 tons and 20,000 tons, respectively, were reported. Some of the buying in the East was at the expense of prices, which have reached a level that the trade regards as scraping bottom. Competition in the East has been further accentuated by a reduction of 50c. a ton in the barge rate on pig iron from Buffalo to New York harbor. The Valley market, which has been unusually dull, will be tested by a 5000-ton inquiry for basic iron from an Alliance, Ohio, plant.

Heavy melting steel scrap has advanced 25c. a ton at Pittsburgh, Cleveland and Chicago. Purchases to cover unfilled contracts and speculative

buying by dealers, together with decreased industrial production of scrap and reluctance to sell at present prices, have contributed to the gain in market strength. At Buffalo, which has received large Lake shipments of scrap from Detroit, the market is conspicuous because of its continued weakness.

Coke and coal buyers remain apathetic notwithstanding the continuance of the soft coal strike and the threat of a walkout by the anthracite miners.

On sales of cast iron pipe in the Chicago district, the decline of \$1 a ton reported a week ago has been followed by another drop of 50c., to \$32.50, Birmingham, for 6-in. and larger diameters.

Business in wire nails is better than was expected, and while the price of \$2.55 per keg, Pittsburgh basing, is the ruling quotation, sales have been made at \$2.50.

Orders for commercial steel castings in June represented 63 per cent of capacity, compared with 50 per cent in May and 53 per cent a year ago. Bookings for the six months, at 505,000 tons, were more than 8 per cent below those of the first half of 1926.

Exports of iron and steel fell off in June from May, but the half year's export shipments were 10 per cent ahead of those for the same period of 1926. In imports, a drop in June brought the first half tonnage 37 per cent under that of the six months of last year, the large difference being due to the heavy curtailment in the incoming movement of pig iron.

Renewed pressure to land foreign structural steel on the Pacific Coast has brought quotations down to 1.57c., c.i.f., duty paid, San Francisco, to large buyers, the lowest this year. Meanwhile it remains to be seen whether or not Eastern mills, quoting on a c.i.f. basis for the Coast, will absorb in August buying the \$3 increase in coastwise ocean freights from Atlantic seaboard.

Fairly active buying of non-ferrous metals except tin has been accompanied by sharp rises in prices of copper, lead, zinc and antimony. Large consumers bought electrolytic copper at 13c., delivered Connecticut Valley. The Copper Export Association has advanced its quotation for foreign shipment to 13.25c., delivered at European ports. Three advances in lead were made by the principal producer on successive days, the market now ranging from 6.50c. to 6.70c., New York. A week ago it was at 6.20c., the lowest since 1924. Zinc is now 6.70c., New York, and antimony is up 1c. a pound to 12.50c., New York.

THE IRON AGE pig iron composite price has again fallen. It is now \$18.42, the lowest since March, 1922. The composite price for finished steel remains at 2.367c. a lb.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

Pig Iron, Per Gross Ton:	July 26, 1927	July 19, 1927	June 28, 1927	July 27, 1926
No. 2, fdy., Philadelphia...	\$20.76	\$20.76	\$21.26	\$21.76
No. 2, Valley furnace.....	18.00	18.00	18.00	17.50
No. 2, Southern, Cin'tl....	20.94	20.94	21.69	24.19
No. 2, Birmingham.....	17.25	17.25	18.00	21.00
No. 2 foundry, Chicago*..	20.00	20.00	20.00	21.00
Basic, del'd eastern Pa....	20.75	20.75	20.75	21.00
Basic, Valley furnace.....	17.50	17.50	17.50	17.50
Valley Bessemer, del'd P'gh	20.26	20.26	20.26	20.26
Malleable, Chicago*	20.00	20.00	20.00	21.00
Malleable, Valley	18.00	18.00	18.00	17.75
Gray forge, Pittsburgh....	19.26	19.26	19.26	18.76
L. S. charcoal, Chicago....	27.04	27.04	27.04	29.04
Ferromanganese, furnace.	90.00	90.00	90.00	88.00

Rails, Billets, etc., Per Gross Ton:	July 26, 1927	July 19, 1927	June 28, 1927	July 27, 1926
O.-h. rails, heavy, at mill..	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	36.00	36.00	36.00	34.00
Bess. billets, Pittsburgh...	33.00	33.00	33.00	35.00
O.-h. billets, Pittsburgh...	33.00	33.00	33.00	35.00
O.-h. sheet bars, P'gh....	34.00	34.00	33.50	36.00
Forging billets, P'gh.....	39.00	39.00	39.00	40.00
O.-h. billets, Phila.....	38.30	38.30	38.30	40.30
Wire rods, Pittsburgh....	43.00	42.00	42.00	45.00
Skelp, grvd. steel, P'gh, lb.	1.80	1.80	1.80	1.90

Finished Iron and Steel,	Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.12	2.12	2.12	2.22	
Iron bars, Chicago.....	2.00	2.00	2.00	2.00	
Steel bars, Pittsburgh...	1.80	1.80	1.80	2.00	
Steel bars, Chicago.....	2.00	2.00	2.00	2.10	
Steel bars, New York....	2.14	2.14	2.14	2.34	
Tank plates, Pittsburgh...	1.80	1.80	1.80	1.90	
Tank plates, Chicago.....	2.00	2.00	2.00	2.10	
Tank plates, New York...	2.09	2.09	2.09	2.24	
Beams, Pittsburgh	1.80	1.80	1.80	2.00	
Beams, Chicago	2.00	2.00	2.00	2.10	
Beams, New York.....	2.04	2.04	2.04	2.34	
Steel hoops, Pittsburgh...	2.30	2.30	2.30	2.50	

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire,	July 26, 1927	July 19, 1927	June 28, 1927	July 27, 1926
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	3.00	3.00	3.00	2.95
Sheets, black, No. 24, Chi-				
cago dist. mill.....	3.10	3.10	3.10	3.10
Sheets, galv., No. 24, P'gh	3.85	3.85	3.85	3.75
Sheets, galv., No. 24, Chi-				
cago dist. mill.....	3.95	3.95	3.95	3.95
Sheets, blue, 9 & 10, P'gh	2.25	2.25	2.25	2.30
Sheets, blue, 9 & 10, Chi-				
cago dist. mill.....	2.35	2.35	2.35	2.40
Wire nails, Pittsburgh....	2.55	2.55	2.50	2.65
Wire nails, Chicago dist.				
mill	2.60	2.60	2.55	2.70
Plain wire, Pittsburgh....	2.40	2.40	2.40	2.50
Plain wire, Chicago dist.				
mill	2.45	2.45	2.45	2.55
Barbed wire, galv., P'gh..	3.25	3.25	3.20	3.35
Barbed wire, galv., Chi-				
cago dist. mill.....	3.30	3.30	3.25	3.40
Tin plate, 100 lb. box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:	July 26, 1927	July 19, 1927	June 28, 1927	July 27, 1926
Heavy melting steel, P'gh..	\$15.25	\$15.00	\$14.75	\$17.00
Heavy melting steel, Phila.	13.00	13.00	14.00	15.75
Heavy melting steel, Ch'go	12.25	12.00	12.00	14.00
Carwheels, Chicago	14.50	13.50	13.50	16.00
Carwheels, Philadelphia ..	15.00	15.00	15.00	17.00
No. 1 cast, Pittsburgh....	15.00	15.00	15.00	16.00
No. 1 cast, Philadelphia...	16.00	16.00	16.00	17.00
No. 1 cast, Ch'go (net ton)	14.50	14.50	14.50	17.00
No. 1 RR. wrot, Phila....	15.50	15.50	16.00	16.50
No. 1 RR. wrot, Ch'go (net)	11.75	11.50	11.00	13.50

Coke, Connellsville, Per Net Ton at Oven:	July 26, 1927	July 19, 1927	June 28, 1927	July 27, 1926
Furnace coke, prompt....	\$3.00	\$3.00	\$3.00	\$2.85
Foundry coke, prompt....	4.00	4.00	4.00	4.00

Metals,	Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	13.00	12.75	12.62 1/2	14.37 1/2	
Electrolytic copper, refinery	12.75	12.50	12.37 1/2	14.12 1/2	
Zinc, St. Louis.....	6.35	6.17 1/2	6.22 1/2	7.47 1/2	
Zinc, New York.....	6.70	6.52 1/2	6.57 1/2	7.82 1/2	
Lead, St. Louis.....	6.35	5.95	6.15	8.70	
Lead, New York.....	6.50	6.20	6.40	8.90	
Tin (Stralts), New York...	63.75	63.75	66.00	63.50	
Antimony (Asiatic), N. Y.	12.50	11.50	12.25	16.00	

Pittsburgh

Steel Market Has Better Undertone— Heavy Melting Scrap Advances 25c.

PITTSBURGH, July 26.—While the market in the Pittsburgh and Valley districts continues to be characterized by seasonal dullness, it shows a somewhat better undertone. A moderate buying movement in sheets, including rush orders, has developed, with requirements coming from implement manufacturers, the automotive industry and railroad car builders. Demands from the automotive producers were said to have been in anticipation of new models, and interest has been manifested in the report that the Ford Motor Co. has placed orders for good-sized tonnages. It remains to be seen whether or not this presages the early appearance of the new Ford cars. Sheet prices are being well maintained, and production is at the rate of approximately 75 per cent of capacity, reflecting a slight increase in the output. There also has been some new buying of tin plate, some of which involved quick deliveries. The output in this line likewise has shown a small increase in this district and now is rated at about 75 per cent of capacity.

A firmer tone is shown in the price for wire rods at \$43, base Pittsburgh or Youngstown, and the level of \$34 for sheet bars at Pittsburgh or Youngstown seems to be better established for the current market. Buying in these lines, however, is still light. There is a steadier demand for bars, shapes and plates, but it has shown no substantial increase.

Scrap prices have gone up 25c. a ton for a few of the more important grades. These advances are due to the efforts of dealers who have been short on contracts to cover requirements and to the difficulty in finding tonnages. Mills evidently are still well supplied with stocks of old material and continue to show a lack of interest in the market.

The pig iron and coke markets are dragging, although light tonnages of steel-making and foundry iron are moving. At the same time, with possibly an exception or so, more merchant iron is being piled than shipped. One merchant interest in describing the pig iron market expressively declared that buying, instead of being on a hand-to-mouth basis, now is being done from "chin to mouth."

On the whole, there is a better feeling in the steel market. Some observers express confidence that there will be a sharp upturn in buying within a month or six weeks. This view is based partly on the fact that there are no stocks of importance in the hands of consumers and also on the claim that buyers feel that prevailing price levels provide an attractive reason for coming into the market where there is promise of comparatively early business for their remanufactured products.

Ingot production in the Pittsburgh district is being maintained by the Steel Corporation at about 75 per cent of capacity, while the independent operations have moved up slightly and are estimated at about 60 per cent of capacity. In the Mahoning Valley there has been a decline of independent production to about 60 per cent of capacity, but the Carnegie Steel Co. at Youngstown has increased ingot production to approximately 85 per cent of capacity.

Pig Iron.—The market for pig iron continues to be listless. Demand is extremely light, and while there has been a small increase in buying, tonnages moving for the most part involve carlots. There was a sale, however, of 1000 tons of gray forge at the going price of \$17.50, Valley. The largest inquiry in this district has come from the American Steel Foundries and calls for 3000 to 5000 tons of basic iron for August-September-October delivery at Alliance, Ohio. It is understood that the quotations made have been at the regular market level of \$17.50, Valley. In the event that this inquiry materializes into a closed transaction, it promises to test the market, and therefore it is being watched with considerable interest. Merchant furnace operations in western Pennsylvania and the Mahoning Valley continue unchanged from last week, being at the rate of about 30 per cent of capacity. Despite this small production it is evident that iron being piled at furnaces, with one or two exceptions, exceeds shipments.

Prices per gross ton, f.o.b. Valley furnace:

Basic	\$17.50
Bessemer	18.50
Gray forge	17.50
No. 2 foundry	18.00
No. 3 foundry	17.50
Malleable	18.00
Low phosphorus, copper free....	\$27.50 to 28.00

Freight rate to the Pittsburgh or Cleveland district, \$1.76.

Ferroalloys.—Specifications are slow, with no indication of immediate improvement, although in view of the feeling that steel works production will show an upturn about Sept. 1, larger requirements are expected to come out.

Semi-Finished Steel.—The price of \$34 for sheet bars at Pittsburgh or Youngstown appears to be more firmly established, and current sales at a lower figure are said to be decreasing in number. There also has developed a somewhat better tone in the market for wire rods, and the prevailing quotation now is \$43, base Pittsburgh or Youngstown. Demand, however, is not large. The market for billets is quiet, with prices unchanged at \$33, Pittsburgh or Youngstown.

Bars, Plates and Shapes.—While there is no marked improvement in the market for bars, shapes and plates, demand during the past week was somewhat steadier than it has been recently. Otherwise the general situation shows no change. Producers look for greater demand within 30 or 60 days. Bars continue to be stronger than plates or shapes, and some makers are quoting 1.85c., Pittsburgh, but the prevailing price on the three products is 1.80c., Pittsburgh. Fabricators report that there still is considerable estimating being done and that prospects for increased demand in the near future are promising. The past week was not quite so good from the viewpoint of demand as the preceding week. The largest award coming to this district was 1900 tons for 12 barges for the Kelly Axe & Tool Co., Charleston, W. Va., and went to the Jones & Laughlin Steel Corporation.

Wire Products.—Business in wire products during July, while not lively, has been better than some producers had expected, and with good crop prospects

improvement in demand in agricultural lines is expected to develop soon. An encouraging feature is that there are no sizable stocks in the hands of jobbers, with the result that mills are being directly drawn upon by consumers to a greater extent than would be the case otherwise. Producers say that the price of \$2.55, base Pittsburgh or Cleveland, on wire nails for jobbers in car lots is being well maintained.

Track Supplies.—The Chesapeake & Ohio Railway is expected to come into the market within a few days for 55,000 tons of standard-section rails. It is also reported that other good-sized rail tonnages are about to come out. The demand for light rails is moderate, with producers quoting \$36, Pittsburgh. The market for standard and small spikes is quiet.

Tubular Goods.—Demand for standard pipe is not so great as it was one year ago, when it was active, but is better than it was for the corresponding period two or three years ago. For the most part orders being received involve only small lots. Backlogs of oil country goods are becoming smaller. Production is at the rate of about 65 per cent of capacity.

Tin Plate.—Heavier demand for stock items of tin plate has developed during the past week in this district, and there also has been an increasing demand in the Middle West, where mills are reported to be operating at full capacity. The operations in the Pittsburgh district are at the rate of about 75 per cent of capacity.

Cold-Finished Steel Bars and Shafting.—New demand for cold-finished steel bars is light, but specifications, except from the automobile industry, are good. Operations continue at about 60 per cent of capacity. Makers are quoting 2.30c., Pittsburgh, on third quarter business, but it is understood that on large-size orders the price of 2.20c., Pittsburgh, has not disappeared.

Hot-Rolled Flats.—Prices of hot-rolled flats remain unchanged, but specifications have shown a slight decrease. New demand is only fair.

Cold-Rolled Strips.—The production of cold-rolled strip steel continues at the rate of 60 to 65 per cent of capacity. Demand is light, and specifications are showing little change.

Coke.—The market for coke is featureless. Blast furnace and foundry operators still show a lack of interest in the market for fuel, and much the greater part of both the coke and coal being shipped is on contract. Furnace coke continues to be quoted at \$3 to \$3.15 and, in one case, at \$3.25, Connellsville. The general quotation is the minimum figure. It is claimed that the larger producers are losing money by reason of the maintenance of the old wage scale, but that some of the smaller operators have been able to yield a profit by cutting wages. It is not believed that there is much probability of the large producers reducing wages. Foundry coke continues to be quoted at \$4 to \$4.25.

Old Material.—Improvement in the undertone of the market for scrap, together with difficulty experienced by dealers in getting supplies, has given strength to the situation, and a number of grades, including

THE IRON AGE Composite Prices

Finished Steel July 26, 1927, 2.367c. a Lb.

One week ago.....	2.367c.
One month ago.....	2.367c.
One year ago.....	2.431c.
10-year pre-war average.....	1.689c.

Based on steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 86 per cent of the United States output of finished steel.

	High		Low	
1927	2.453c.	Jan. 4:	2.339c.	April 26
1926	2.453c.	Jan. 5:	2.403c.	May 18
1925	2.560c.	Jan. 6:	2.396c.	Aug. 18
1924	2.789c.	Jan. 15:	2.460c.	Oct. 14
1923	2.824c.	April 24:	2.446c.	Jan. 2

Pig Iron July 26, 1927, \$18.42 a Gross Ton

One week ago.....	\$18.50
One month ago.....	18.71
One year ago.....	19.46
10-year pre-war average.....	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low	
1927	\$19.71,	Jan. 4:	\$18.42,	July 26
1926	21.54,	Jan. 5:	19.46,	July 13
1925	22.50,	Jan. 13:	18.96,	July 7
1924	22.88,	Feb. 26:	19.21,	Nov. 3
1923	30.86,	March 20:	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills.....	1.80c. to 1.85c.
F.o.b. Chicago.....	2.00c.
Del'd Philadelphia.....	2.12c. to 2.17c.
Del'd New York.....	2.14c. to 2.19c.
Del'd Cleveland.....	1.99c. to 2.04c.
F.o.b. Cleveland.....	1.80c. to 1.85c.
F.o.b. Birmingham.....	1.95c. to 2.05c.
C.i.f. Pacific ports.....	2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills.....	1.80c. to 1.90c.
F.o.b. Birmingham.....	1.95c. to 2.05c.

Rail Steel

F.o.b. mill.....	1.65c. to 1.80c.
F.o.b. Chicago.....	1.90c.

Iron

Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	2.75c.
Common iron, del'd Philadelphia.....	2.12c.
Common iron, del'd New York.....	2.14c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill.....	1.75c. to 1.85c.
F.o.b. Chicago.....	2.00c.
F.o.b. Birmingham.....	1.90c. to 2.00c.
Del'd Cleveland.....	1.99c. to 2.04c.
Del'd Philadelphia.....	2.07c. to 2.17c.
Del'd New York.....	2.09c. to 2.19c.
C.i.f. Pacific ports.....	2.25c. to 2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mills.....	1.75c. to 1.85c.
F.o.b. Chicago.....	2.00c.
F.o.b. Birmingham.....	1.90c. to 2.00c.
Del'd Cleveland.....	1.99c. to 2.04c.
Del'd Philadelphia.....	1.92c. to 2.12c.
Del'd New York.....	1.99c. to 2.14c.
C.i.f. Pacific ports.....	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh.....	2.30c.
All gages, 6 in. to 12 in., P'gh.....	*2.10c.
Nos. 13 and 14 gage, 12 in. to 14 in., P'gh, net.....	2.30c.
Nos. 15 and 16 gage, 12 in. to 14 in., P'gh, net.....	2.40c.
All gages, narrower than 6 in., Chicago, 2.40c. to 2.60c.	
All gages, 6 in. and wider, Chicago, 2.20c. to 2.50c.	

*Mills follow plate or sheet prices according to gage on wider than 14 in.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills.....	2.20c. to 2.30c.
Bars, f.o.b. Chicago.....	2.30c.
Bars, Cleveland.....	2.35c.
Shafting, ground, f.o.b. mill.....	*2.45c. to 2.90c.
Strips, under 12 in., f.o.b. P'gh mill.....	3.25c.
Strips, under 12 in., f.o.b. Cleveland mills.....	3.25c.
Strips, under 12 in., delivered Chicago.....	3.55c.
Strips, under 12 in., f.o.b. Worcester mill.....	3.40c.
Stripsheets, 12 in. and wider, Pittsburgh mill.....	3.00c.
Stripsheets, 12 in. and wider, Cleveland mill.....	3.00c.
Stripsheets, 12 in. and wider, del'd Chicago.....	3.30c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails.....	\$2.55
Galvanized nails.....	4.55
Galvanized staples.....	3.25
Polished staples.....	3.00
Cement coated nails.....	2.55
	Base Per 100 Lb.
Bright plain wire, No. 9 gage.....	\$2.40
Annealed fence wire.....	2.55
Spring wire.....	3.40
Galv'd wire, No. 9.....	3.00
Barbed wire, galv'd.....	3.25
Barbed wire, painted.....	3.00
Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.	

Woven Wire Fence

	Base to Retailers Per Net Ton
F.o.b. Pittsburgh.....	\$65.00
F.o.b. Cleveland.....	65.00
F.o.b. Anderson, Ind.....	66.00
F.o.b. Chicago district mills.....	67.00
F.o.b. Duluth.....	68.00
F.o.b. Birmingham.....	68.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh.....	2.25c.
Nos. 9 and 10, f.o.b. Chicago dist. mill.....	2.35c.
Nos. 9 and 10, del'd Philadelphia.....	2.57c.
Nos. 9 and 10, f.o.b. Birmingham.....	2.40c.

Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh.....	3.00c.
No. 24, f.o.b. Ch'go dist. mill.....	3.10c.
No. 24, del'd Philadelphia.....	3.32c.
No. 24, f.o.b. Birmingham.....	3.15c.

Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade.....	4.10c.
No. 24, f.o.b. Pittsburgh, B grade.....	4.00c.

Galvanized

No. 24, f.o.b. Pittsburgh.....	3.85c.
No. 24, f.o.b. Chicago dist. mill.....	3.95c.
No. 24, del'd Philadelphia.....	4.17c.
No. 24, f.o.b. Birmingham.....	4.00c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	3.00c. to 3.10c.
No. 28, f.o.b. Chicago dist. mill.....	3.20c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....	4.25c.
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Long Ternes

No. 24, 8-lb. coating, f.o.b. mill.....	4.20c. to 4.30c.
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Tin Plate

Per Base Box

Standard cokes, f.o.b. P'gh district mills.....	\$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.....	5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating I.C. \$11.40	25-lb. coating I.C. \$17.30
15-lb. coating I.C. 14.45	30-lb. coating I.C. 18.75
20-lb. coating I.C. 15.80	40-lb. coating I.C. 20.85

Alloy Steel Bars

(F.o.b. Pittsburgh, Chicago or Ohio Mill)

S. A. E. Series

Numbers	Base Per 100 Lb.
2100* (½% Nickel, 0.10% to 0.20% Carbon).....	\$2.90 to \$3.00
2300 (¾% Nickel).....	4.10 to 4.20
2500 (5% Nickel).....	5.00 to 5.25
3100 (Nickel Chromium).....	3.10 to 3.20
3200 (Nickel Chromium).....	4.75 to 5.00
3300 (Nickel Chromium).....	6.75 to 7.00
3400 (Nickel Chromium).....	6.00 to 6.25
5100 (Chromium Steel).....	3.10 to 3.20
5200* (Chromium Steel).....	7.00 to 7.50
6100 (Chrom. Vanadium bars).....	4.10 to 4.30
6100 (Chrom. Vanad. spring steel).....	3.60 to 3.80
9250 (Silicon Manganese spring steel).....	3.00 to 3.15
Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.).....	4.10 to 4.20
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.).....	4.10 to 4.30
Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.).....	4.00 to 4.25
Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.).....	3.20 to 3.30
Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum).....	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½ in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specification, but numbered by manufacturers to conform to S. A. E. system.

Rails

Per Gross Ton

Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	36.00
Light (from rail steel), f.o.b. mill.....	34.00
Light (from billets), f.o.b. Ch'go mill.....	\$36.00 to \$8.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, ½ in. and larger.....	\$2.80 to \$2.90
Spikes, ½ in. and smaller.....	2.80 to 3.00
Spikes, boat and barge.....	3.10
Tie plates, steel.....	2.75
Angle bars.....	3.90
Track bolts, ½ in. and ¾ in.....	
Track bolts, ¾ in. and smaller, per 100 count.....	70 per cent off list

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/8	45	19 1/2	1/4 to 3/8	+11	+39
1/4	51	25 1/2	1/2	22	2
3/8	56	42 1/2	3/4	28	11
1/2	60	48 1/2	1 to 1 1/2	30	13
1 to 3	62	50 1/2			
Lap Weld					
2	55	43 1/2	2	23	7
2 1/2 to 6	59	47 1/2	2 1/2	26	11
7 and 8	56	43 1/2	3 to 6	28	13
9 and 10	54	41 1/2	7 to 12	26	11
11 and 12	53	40 1/2			
Butt Weld, extra strong, plain ends					
1/8	41	24 1/2	1/4 to 3/8	+19	+54
1/4	47	30 1/2	1/2	21	17
3/8	53	42 1/2	3/4	28	12
1/2	58	47 1/2	1 to 1 1/2	30	14
1 to 1 1/2	60	49 1/2			
2 to 3	61	50 1/2			

heavy melting steel, have advanced 25c. per ton. Cast iron borings are up \$1. Covering by dealers on contracts found them short and resulted in stronger efforts to buy material. The movement started with the issuance of the Pennsylvania Railroad list involving approximately 50,000 tons early during the present month, when the tonnage was absorbed in the Middle West. Mills, however, appear to have a plentiful supply of stocks and are showing little interest in the market. The recent short covering in compressed sheets has disappeared, and this grade now has assumed its normal differential of \$1 under heavy melting steel. The Baltimore & Ohio has issued a list of 19,800 tons, on which bids will be closed Aug. 1. Among the items are 5500 tons of No. 1 old steel rails, 5 ft. and over; 5000 tons of heavy melting steel; 3000 tons of old steel cars and 1300 tons of No. 1 old wheels.

Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:

Basic Open-Hearth Furnace Grades:	
Heavy melting steel.....	\$15.25 to \$15.50
Scrap rails	14.50 to 15.00
Compressed sheet steel.....	14.25 to 14.50
Bundled sheets, sides and ends.....	13.50 to 13.75
Cast iron carwheels	15.00 to 15.50
Sheet bar crops, ordinary.....	15.25 to 15.50
Heavy breakable cast	14.50 to 15.00
No. 2 railroad wrought.....	15.25 to 15.50
Heavy steel axle turnings.....	13.50 to 14.00
Machine shop turnings	11.50 to 12.00
Acid Open-Hearth Furnace Grades:	
Railroad knuckles and couplers.....	16.75 to 17.00
Railroad coil and leaf springs.....	16.75 to 17.00
Rolled steel wheels	16.75 to 17.00
Low phosphorus billet and bloom ends	19.00 to 19.50
Low phosphorus, mill plate.....	18.50 to 19.00
Low phosphorus, light grade.....	16.75 to 17.00
Low phosphorus sheet bar crops.....	18.00 to 18.50
Heavy steel axle turnings	13.50 to 14.00
Electric Furnace Grades:	
Low phosphorus punchings.....	17.00 to 17.50
Heavy steel axle turnings.....	13.50 to 14.00
Blast Furnace Grades:	
Short shovelling steel turnings.....	11.50 to 12.00
Short mixed borings and turnings.....	10.50 to 11.00
Cast iron borings.....	11.50 to 12.00
No. 2 busheling	10.00 to 10.50
Rolling Mill Grades:	
Steel car axles	19.00 to 20.00
No. 1 railroad wrought	12.00 to 12.50
Cupola Grades:	
No. 1 cast	15.00 to 15.50
Rails 3 ft. and under.....	16.00 to 16.50
Malleable Grades:	
Railroad	15.00 to 15.25
Industrial	14.50 to 14.75
Agricultural	14.00 to 14.25

Bolts, Nuts and Rivets.—Makers of rivets report that a moderate amount of business has been taken at the increased price of \$3, base, Pittsburgh or Cleveland, on sizes ½ in. and larger, effective July 15 for non-contracting consumers. Other prices remain unchanged, and operations continue at about 55 to 60 per cent of capacity. Demand during the past week has shown a slight improvement. The Graham Bolt & Nut Co., effective July 1, issued a supplemental list on track bolts under its new policy of selling on

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes.....	2.90c.
Reinforcing steel bars	2.75c.
Cold-finished and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.60c. to 3.65c.
Hoops	4.00c. to 4.50c.
Black sheets (No. 24 gage), 25 or more bundles.....	3.75c.
Galvanized sheets (No. 24 gage), 25 or more bundles.....	4.60c.
Blue annealed sheets (No. 10 gage), 25 or more sheets.....	3.30c.
Spikes, large	3.30c. to 3.40c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Track bolts, ¾ in. and smaller, per 100 count, 62½ per cent off list	
Machine bolts, per 100 count, 62½ per cent off list	
Carriage bolts, per 100 count, 62½ per cent off list	
Nuts, all styles, per 100 count, 62½ per cent off list	
Large rivets, base per 100 lb.....	\$3.50
Wire, black soft annealed, base per 100 lb.....	2.90
Wire, galvanized soft, base per 100 lb.....	2.90
Common wire nails, per keg.....	\$2.80 to 2.90
Cement coated nails, per keg.....	2.85 to 2.95

the piece instead of the pound basis. The new list includes all sizes above ¾ in. in diameter and supplements that of April 1, which included sizes up to and including ¾ in. in diameter. It is the plan to abandon the pound basis entirely. The new basis is held to be more accurate, and its operation is said to be working out well.

Sheets.—Demand for sheets in this district during the past week was better than it has been for several weeks. Increased requirements have come from the automotive manufacturers, implement makers and railroad car builders. Specifications for automotive sheets showed a substantial upturn and were in anticipation of new models. It is reported that the Ford Motor Co. has placed considerable tonnage with the mills. There has also been an exceptional volume of rush orders. Demand coming from the implement makers and railroad car builders largely has centered around blue annealed and galvanized sheets, while black sheets were affected most by rush orders. Manufacturers probably have smaller stocks on hand than the jobbers, and supplies in the hands of the latter are said to be rather low. Blue annealed is quoted at 2.25c., black at 3c., galvanized at 3.85c. and automobile body at 4.25c., base Pittsburgh.

Increased Buying of Steel Pipe Expected —Sheet Steel Prices Firm

YOUNGSTOWN, July 26.—President J. A. Campbell of the Youngstown Sheet & Tube Co., in his report to the directors of the company today, spoke of improvement in the oil situation that will mean increased buying of steel pipe in the last quarter. An upturn in the oil situation benefiting the steel tube makers had not been expected until the spring of 1928. The volume of steel demand is holding at recent levels, with prices firm, he said. The strength exhibited by sheet steel prices was regarded by Mr. Campbell as encouraging to the industry.

Net profits of the company for the second quarter, after charges of \$2,062,215, are equivalent to \$1.84 per share on common stock, compared with profits of \$2.03 per share the first quarter. From second quarter earnings the company carried to surplus \$578,488, bringing that item, as of June 30, to \$43,940,061. For the second quarter the company made a charge against earnings of \$2,623,999 for depreciation and mineral depletion.

Earnings for the period, after deducting all expenses of the business, and after deducting charges for repairs and maintenance, were \$6,225,072. The consolidated balance sheet as of June 30 showed assets of \$297,282,962. Current assets of \$78,464,909 compared with current liabilities of \$11,732,506.

Operations this week in the Mahoning Valley are being maintained at 60 per cent by the independents, with the Carnegie Steel Co. averaging 75 to 80 per cent in this district.

The Carnegie company has awarded a contract to the Lowensohn Construction Co., Cleveland, to straighten the channel of the Mahoning River at its McDonald works, at a cost of \$500,000.

Purchases Assets and Good Will of Mohegan Tube Co.

The Mohegan Tube Co. and the Pontiac Tube Products Co., both of Brooklyn, have sold their assets and good will to Steel & Tubes, Inc., of New York, a newly organized company, the capital stock of which is owned by the Elyria Iron & Steel Co., Cleveland. The new company will operate its works under the former management with personnel unchanged, and will control its products from the steel billets to the finished tubes. J. L. Sussman, secretary and general manager of the Mohegan company will be president of the new organization; Myron A. Wick, vice-president and general manager of the Elyria company, will be vice-president; Lyman Bartlett, treasurer of the Mohegan organization, will be treasurer, and George F. White, secretary-treasurer of the Elyria company, will be secretary.

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rerolling, 4-in. and over.....	\$33.00
Rerolling, under 4-in. to and including 1½-in.....	\$33.50 to 34.00
Forging, ordinary.....	39.00 to 40.00
Forging, guaranteed.....	44.00 to 45.00

Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer.....	\$34.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger.....	\$33.00
Smaller than 8 in. x 2 in.....	34.00

Skelp

	Per Lb.
Grooved.....	1.80c. to 1.85c.
Sheared.....	1.80c. to 1.85c.
Universal.....	1.80c. to 1.85c.

Wire Rods

	Per Gross Ton
*Common soft, base.....	\$43.00
Screw stock.....	\$5.00 per ton over base
Carbon 0.20% to 0.40%.....	3.00 per ton over base
Carbon 0.41% to 0.55%.....	5.00 per ton over base
Carbon 0.56% to 0.75%.....	7.50 per ton over base
Carbon over 0.75%.....	10.00 per ton over base
Acid.....	15.00 per ton over base

*Chicago mill base is \$44. Cleveland mill base, \$43.

Prices of Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesabi Bessemer, 51.50% iron.....	4.40
Mesabi non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15
Foreign Ore, c.i.f. Philadelphia or Baltimore	

Per Unit

Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algeria.....	10.50c.
Iron ore, Swedish, average 66% iron.....	9.75c. to 10.00c.
Manganese ore, washed, 52% manganese, from the Caucasus.....	40c. to 41c.
Manganese ore, Brazilian, African or Indian, basis 50%.....	40c. to 42c.
Tungsten ore, high grade, per unit, in 60% concentrates.....	\$10.50 to \$11.00
Chrome ore, 45 to 50% Cr ₂ O ₃ , crude, c.i.f. Atlantic seaboard.....	\$22.00 to \$24.00
Molybdenum ore, 85% concentrates of MoS ₂ , delivered.....	50c. to 55c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt.....	\$3.00 to \$3.15
Foundry, f.o.b. Connellsville prompt.....	4.00 to 4.25
Foundry, by-product, Ch'go ovens.....	9.75
Foundry, by-product, New England, del'd.....	12.00
Foundry, by-product, Newark or Jersey City, delivered.....	9.59 to 10.77
Foundry, Birmingham.....	5.50
Foundry, by-product, St. Louis.....	9.75

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines.....	\$1.30 to \$1.90
Mine run coking coal, f.o.b. W. Pa. mines.....	1.70 to 1.90
Mine run gas coal, f.o.b. Pa. mines.....	2.00
Steam slack, f.o.b. W. Pa. mines.....	1.25
Gas slack, f.o.b. W. Pa. mines.....	1.40 to 1.50

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd.....	\$90.00
Foreign, 80%, Atlantic or Gulf port, duty paid.....	90.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%.....	\$33.00 to \$34.00
Domestic, 16 to 19%.....	32.00 to 33.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%.....	\$85.00 to \$87.50
75%.....	145.00
	Per Gross Ton Furnace
10%.....	\$35.00
11%.....	37.00
	Per Gross Ton Furnace
12%.....	\$39.00
14 to 16%.....	\$45 to 46.00

Bessemer Ferrosilicon

	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace.....	
10%.....	\$34.00
11%.....	36.00

Silvery Iron

	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace.....	
6%.....	\$26.50
7%.....	27.50
8%.....	28.50
9%.....	30.00

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd.....	95c. to \$1.05
Ferrocromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads.....	11.50c.
Ferrovandium, per lb. contained vanadium, f.o.b. furnace.....	\$3.15 to \$3.65
Ferrocobaltitium, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton.....	\$91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton.....	\$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines.....	\$17.00 to \$18.00
No. 2 lump, Illinois and Kentucky mines.....	\$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid.....	\$16.00
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines.....	\$32.50

Fire Clay

	Per 1000 f.o.b. Works
First Quality.....	
Second Quality.....	
Pennsylvania.....	\$43.00 to \$46.00
Maryland.....	43.00 to 46.00
New Jersey.....	50.00 to 65.00
Ohio.....	43.00 to 46.00
Kentucky.....	43.00 to 46.00
Missouri.....	43.00 to 46.00
Illinois.....	43.00 to 46.00
Ground fire clay, per ton.....	7.00

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania.....	\$43.00
Chicago.....	52.00
Birmingham.....	50.00
Silica clay, per ton.....	\$8.50 to 10.00

Magnesite Brick

	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.....	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.....	40.00

Chrome Brick

	Per Net Ton
Standard size.....	\$45.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

Per 100 Pieces

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List

Machine bolts.....	70
Carriage bolts.....	70
Lag bolts.....	70
Plow bolts, Nos. 1, 2, 3 and 7 heads.....	70
Hot-pressed nuts, blank or tapped, square.....	70
Hot-pressed nuts, blank or tapped, hexagon.....	70
C.p.c. and t. square or hex. nuts, blank or tapped.....	70
Washers*.....	6.75c. to 6.50c. per lb. off list

*F.o.b. Chicago, New York and Pittsburgh.
†Bolts with rolled threads up to and including ¾ in. x 6 in. take 10 per cent lower list prices.

Bolts and Nuts

Per Cent Off List

Semi-finished hexagon nuts.....	70
Semi-finished hexagon castellated nuts, S.A.E.....	70
Stove bolts in packages.....	80, 10 and 5
Stove bolts in bulk.....	80, 10, 5 and 2½
Tire bolts.....	60 and 5

Large Rivets

(½-In. and Larger)

Base per 100 Lb.

F.o.b. Pittsburgh or Cleveland.....	\$2.75 to \$3.00
F.o.b. Chicago.....	2.85 to 3.10

Small Rivets

(¼-In. and Smaller)

Per Cent Off List

F.o.b. Pittsburgh.....	70, 10 and 5
F.o.b. Cleveland.....	70, 10 and 5 to 70 and 10
F.o.b. Chicago.....	70, 10 and 10 to 70 and 10

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)

Per Cent Off List

Milled cap screws.....	80, 10 and 10
Milled standard set screws, case hardened.....	80 and 10
Milled headless set screws, cut thread.....	80
Upset hex. head cap screws, U.S.S. thread.....	85 and 5
Upset hex. cap screws, S.A.E. thread.....	85 and 5
Upset set screws.....	80, 10 and 10
Milled studs.....	70 and 5

Chicago

Better Steel Demand from Implement Trade—Northern Pacific Buys Rails

CHICAGO, July 26.—Consumer purchases of steel indicate a more strict adherence to close range buying, which, while not making for satisfactory rolling schedules, lends assurance to mills that stocks are low and that an improvement in the general business situation will be promptly felt at steel-producing centers. Specifications, which closely approach the weekly average so far this year, are about equal to production, which is at 70 per cent of ingot capacity. New orders are nearly 12 per cent ahead of the weekly average to date in 1927, and fresh inquiry, not including rails and track supplies, is more promising than it has been in several months.

The railroad equipment market is dull and gives no promise of betterment, at least in time to keep mills from being forced for the remainder of the summer to arrange rolling schedules on numerous orders of small individual tonnages. A quickening in demand from manufacturers of agricultural machinery is noted. Specifications from that source have made gains that are holding and fresh inquiry points to larger orders.

Pig Iron.—Resistance to Chicago prices which stand at \$20, furnace, is growing, and users are less willing to place sizable tonnages at present levels. A large inquiry issued in Chicago a week ago has not been placed because of reported differences of opinion as to prices. It now appears that tonnage will be spread out and that purchases will be made as requirements demand. Fresh inquiry of note includes 3000 to 5000 tons of basic iron for delivery in Ohio, 1200 tons of foundry iron for a Chicago melter and 250 tons for a foundry in Indiana. A purchase of about 500 tons is the largest reported. Spot sales are increasing in number, but the size of orders, if changing, is decreasing. A melter south of Chicago has taken 1000 tons of Southern iron at \$17.25 Birmingham, or \$21.43, delivered by rail and barge. Several small-tonnage sales of charcoal iron have been made at \$24, furnace, or \$27.04, delivered Chicago. The silvery market is quiet, and the price schedule is unchanged.

Prices per gross ton at Chicago:

Northern No. 2 foundry, sil.	1.75	
to 2.25		\$20.00
N't'n No. 1 fdy., sil.	2.25 to 2.75	20.50
Malleable, not over 2.25 sil.		20.00
High phosphorus		20.00
Lake Superior charcoal, averaging sil.	1.50	27.04
Southern No. 2 fdy. (all rail)		23.26
Southern No. 2 (barge and rail)		21.43
Low phos., sil. 1 to 2 per cent, copper free		\$31.50 to 32.00
Silvery, sil. 8 per cent.		33.29
Bessemer ferrosilicon, 14 to 15 per cent.		46.79

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

Ferroalloys.—Several users of ferromanganese have placed second half contracts at \$90 seaboard. Orders for spiegeleisen are scattered and of carlot proportions. Specifications for ferrosilicon are smaller.

Prices delivered Chicago: 80 per cent ferromanganese, \$97.56; 50 per cent ferrosilicon, \$85 to \$87.50; spiegeleisen, 18 to 22 per cent, \$40.76 to \$41.76.

Plates.—Several small orders for tanks have been placed and, on the whole, shops specializing in plate work are well engaged, but their order books are small and operations at the current rate are not assured for more than a week or two in advance. Old inquiries for large tonnages of plates are still alive, but there are no indications as to when orders will be placed. The railroads and car builders are taking fair quantities of narrow plates, but wide plates are inactive and mill schedules are generally unsatisfactory. Governing prices in and near Chicago are 2c., but competition is keen, as indicated by an order taken this week at 1.90c., Chicago, by an Eastern mill for delivery to a point in

Illinois where the freight differential in favor of Chicago is 20c. per 100 lb.

Mill prices on plates per lb.: 2c., base, Chicago.

Structural Material.—Completion of engineering work on a number of average-size buildings has enabled several shops to order steel and speed up output. The paucity of large awards, however, is affecting the large structural shops, which now are engaged at not more than 75 per cent of capacity. In some quarters it is believed that the midsummer lull in building awards is past and that many projects will be pushed so that construction will be well under way before cold weather sets in. Two railroads with terminals at Chicago have placed 800 tons of bridge work, and an additional tonnage is now being figured.

Mill prices on plain material per lb.: 2c., base, Chicago.

Rails and Track Supplies.—The Northern Pacific has ordered 25,000 tons of standard-section rails, 15,000 tons having been taken by the Illinois Steel Co. and 10,000 tons by the Bethlehem Steel Co. Track accessories for these rails will total 5000 tons, orders for which are expected to be placed in the near future. About 2000 tons of rails in miscellaneous lots have been purchased, and numerous small orders for track fastenings have come to mills this week. Current specifications for track supplies are lighter, this being particularly noticeable in steel tie plates, production of which has been reduced to about 65 per cent of capacity. Heavy rail output is at 50 per cent of local capacity and order books are rapidly being reduced, with still lighter rolling schedules impending. Users of light rails are showing no interest in the market.

Prices f.o.b. mill, per gross ton: Standard-section open-hearth and Bessemer rails, \$43; light rails, rolled from billets, \$36 to \$38. Per lb.: Standard railroad spikes, 2.90c.; track bolts with square nuts, 3.90c.; steel tie plates, 2.35c.; angle bars, 2.75c.

Reinforcing Bars.—This market is quiet both with respect to sales and fresh inquiry. Shipments from warehouses are heavy, and though sales so far this summer have been of fair proportions, they have not been in sufficient volume to sustain bending shop operations, which have tapered to 55 to 60 per cent of capacity. Prices continue to suffer because of competition for going business. Billet steel bars out of Chicago warehouse are not bringing more than 2.05c. per lb. on lots of 100 tons or more, and the rail steel commodity is commonly quoted at 1.90c. The Edgewater Athletic Club, 1200 tons, a local project of long standing, gives some promise of being placed before the end of the summer. New lettings and fresh inquiries are shown on page 249.

Wire Products.—Specifications from the manufacturing trade are being maintained in unchanged volume, and spot sales are more numerous. Business from the jobbing trade is lighter, but it is still running well above the expectations of producers. The most noticeable drop in demand is in the Southwest and in a part of Missouri. Business from Iowa, Nebraska and Illinois is holding, while in the Northwest it has improved. The corn crop, while still showing the effects of late planting and a backward season, has overcome some of that handicap. Purchases of barbed wire and woven fencing by the railroads are in smaller volume, but orders for nails from that source are well up to the average of previous midsummer seasons. Changes in the character of demand have necessitated alterations in departmental operations, but there has been no lowering in the rate of output at wire mills. Specifications for wire nails are in larger volume, and new buying is confined to small lots at \$2.60, Chicago.

Billets.—A purchase of 2000 tons of ordinary forging billets is reported at \$39 per gross ton, Chicago.

Sheets.—Users continue to place small orders in such volume that tonnage on mill books is unchanged. At the same time specifications are the best for any week in the last four months, and production is variously estimated at 80 to 85 per cent of hot mill capacity. Shipments to manufacturers of agricultural machinery are heavier by a small margin, and inquiry

from that source supports the belief that farm equipment will be in larger demand by late summer or early fall. New purchases from the trade as a whole are still at close range, and users clearly indicate their position as to stocks on hand by entering specifications at frequent intervals and by demanding prompt delivery.

Base prices per lb., delivered from mill in Chicago: No. 24 black, 3.15c.; No. 24 galvanized, 4c.; No. 10 blue annealed, 2.40c. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Cast Iron Pipe.—Competition for going business is unusually keen and at least one sale has been made in this district at \$32, Birmingham, for 6-in. and larger diameters. The purchase covered 160 tons. At St. Paul the American Cast Iron Pipe Co. is low bidder on 1000 tons of 3-in. to 16-in. pipe at \$32.75, Birmingham, or \$43.25, delivered. Orders for carlots and less are still numerous and they usually are booked at \$33 to \$34, base Birmingham. Contractors are actively laying pipe and orders from them bulk large in the aggregate. Shipments against old business are steady, and foundry backlogs are diminishing. Makers' books are unbalanced, this being one factor in driving prices to lower levels. Waunakee, Wis., closes Aug. 11 on the complete construction of a water works and sewage plant, requiring 15,190 ft. of 6-in. water pipe, 21 gate valves and 26 hydrants. Delivered prices at Chicago on 6-in. and larger diameters range from \$40.70 to \$41.70.

Prices per net ton, delivered Chicago: Water pipe, 6-in. and over, \$40.70 to \$41.70; 4-in., \$44.70 to \$45.70; Class A and gas pipe, \$4 extra.

Bolts, Nuts and Rivets.—Specifications for these products are in larger volume as a result of increased demand from the agricultural machinery trade. Orders from the railroads have also shown some improvement, but the requirements of the general manufacturing trade are spotty. Weakness in the price of small rivets is still in evidence. Large rivets are holding at the recent advance to \$3.10, Chicago. Operations throughout the bolt, nut and rivet industry are averaging about 60 per cent of capacity.

Bars.—Specifications for soft steel bars are approximately equal to shipments, which represent about 75 per cent of local bar mill capacity. Deliveries to manufacturers of agricultural machinery are holding the gains made in the past few weeks, and fresh inquiry from that source gives promise of a further expansion. As compared with the demand for other finished steel products, the call for mild steel bars is unusually good. Users, however, are generally not willing to take their requirements except in close step with consumption, and mills are dependent upon orders from week to week to maintain rolling schedules. Specifications from the railroads are fully up to what may be expected at this time of the year, and in some cases additional tonnage, beyond what is covered in third quarter contracts, has been placed. The price situation has undergone

little change. The bulk of tonnage from local mills is still being taken at 2c., Chicago, but there is a growing tendency on the part of Eastern mills to take a share of going business at 1.90c., Chicago. Buying of rail steel bars is spotty but now leads shipments by a small margin. Production is steady, and a fair portion of mill output is being set aside for the manufacture of fence posts. Quotations on hard steel bars remain at 1.90c., Chicago, but competition by producers east of here is making it difficult to maintain that level.

Mill prices per lb.: Soft steel bars, 2c., base, Chicago; common bar iron, 2c., base, Chicago; rail steel bars, 1.90c., base, Chicago.

Coke.—July shipments of by-product foundry coke have gradually tapered, and the total for the month will fall short of June deliveries. Prices are steady at \$9.75 local ovens, and \$10.25 delivered in the Chicago switching district.

Old Material.—Except for a purchase of heavy melting steel at 25c. above the market level of a week ago, there is little interest among consumers of scrap. Dealer activity is noticeably stronger, and there seems to be no hesitation by brokers to pay 25c. to 50c. above the market for tonnages to be applied against old contracts. It is rather generally believed that stocks in the hands of melters are low and that if business keeps on an even keel for a few weeks longer buying will become more active. There is active bidding for railroad lists and for scrap available from manufacturers. Shipments to steel mills have been reduced to conform to active steel-making capacity and still there does not seem to be an excessive accumulation of the grades used for that purpose. Here and there some scrap has been put on the ground, but the practice is not general among operators of yards.

Prices delivered consumers' yards, Chicago:

Per Gross Ton	
Basic Open-Hearth Grades:	
Heavy melting steel.....	\$12.25 to \$12.75
Shoveling steel.....	12.25 to 12.75
Frogs, switches and guards, cut apart, and miscellaneous rails.	13.50 to 14.00
Hydraulic compressed sheets....	10.75 to 11.25
Drop forge flashings.....	9.25 to 9.75
Forged, cast and rolled steel car wheels.....	14.50 to 15.00
Railroad tires, charging box size.	14.50 to 15.00
Railroad leaf springs, cut apart..	14.50 to 15.00
Acid Open-Hearth Grades:	
Steel couplers and knuckles.....	14.25 to 14.75
Coil springs.....	15.00 to 15.50
Low phosphorus punchings.....	14.50 to 15.00
Electric Furnace Grades:	
Axle turnings.....	12.00 to 12.50
Blast Furnace Grades:	
Axle turnings.....	10.50 to 11.00
Cast iron borings.....	10.00 to 10.50
Short shoveling turnings.....	10.00 to 10.50
Machine shop turnings.....	7.50 to 8.00
Rolling Mill Grades:	
Iron rails.....	13.50 to 14.00
Rerolling rails.....	15.25 to 15.75
Cupola Grades:	
Steel rails less than 3 ft.....	15.50 to 16.00
Angle bars, steel.....	13.50 to 14.00
Cast iron carwheels.....	14.50 to 15.00
Malleable Grades:	
Railroad.....	14.00 to 14.50
Agricultural.....	14.00 to 14.50
Miscellaneous:	
*Relaying rails, 56 to 60 lb.....	23.00 to 25.00
*Relaying rails, 65 lb. and heavier	26.00 to 31.00
Per Net Ton	
Rolling Mill Grades:	
Iron angle and splice bars.....	14.00 to 14.50
Iron arch bars and transoms....	19.00 to 19.50
Iron car axles.....	20.50 to 21.00
Steel car axles.....	17.50 to 18.00
No. 1 railroad wrought.....	11.75 to 12.25
No. 2 railroad wrought.....	11.00 to 11.50
No. 1 bushelling.....	9.50 to 10.00
No. 2 bushelling.....	6.00 to 6.50
Locomotive tires, smooth.....	13.75 to 14.25
Pipes and flues.....	7.00 to 7.50
Cupola Grades:	
No. 1 machinery cast.....	14.50 to 15.00
No. 1 railroad cast.....	13.50 to 14.00
No. 1 agricultural cast.....	13.50 to 14.00
Stove plate.....	12.75 to 13.25
Grate bars.....	11.50 to 12.00
Brake shoes.....	10.00 to 10.50

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.10c.
Soft steel bars.....	3.00c.
Reinforced bars, billet steel.....	2.05c. to 2.15c.
Cold-finished steel bars and shafting—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Bands.....	3.65c.
Hoops.....	4.15c.
Black sheets (No. 24).....	3.95c.
Galvanized sheets (No. 24).....	4.80c.
Blue annealed sheets (No. 10).....	3.50c.
Spikes, standard railroad.....	3.55c.
Track bolts.....	4.55c.
Rivets, structural.....	3.60c.
Rivets, boiler.....	3.60c.
	Per Cent Off List
Machine bolts.....	60
Carriage bolts.....	60
Coach or lag screws.....	60
Hot-pressed nuts, squares, tapped or blank..	60
Hot-pressed nuts, hexagons, tapped or blank..	60
No. 8 black annealed wire, per 100 lb.....	\$3.20
Common wire nails, base per keg.....	\$2.85 to 2.95
Cement coated nails, base per keg.....	2.95

New York

Heavier Pig Iron Sales—Structural Steel Unusually Active

NEW YORK, July 26.—Sales of pig iron in this territory have shown a marked increase, totaling close to 15,000 tons for the past week as compared with 6000 tons in the previous week. Greater interest on the part of melters is attributed to the belief that prices are scraping bottom and also to a desire for protection against possible advances in the late fall as a result of the coal strike. The complacent attitude of the trade toward the coal situation has been disturbed recently by reports that the anthracite miners may be called out on Sept. 1, on a demand for the enforcement of the check-off. The improved tone of the pig iron market is also due, in some instances, to increased foundry melt. This is particularly true of some plants in Connecticut. Specifications against contracts are coming in at a steady rate, and in some cases anticipated shipments are asked. The Eastern Malleable Iron Co., Naugatuck, Conn., has closed against its inquiry for 2000 tons of foundry for fourth quarter. The A. P. Smith Mfg. Co., East Orange, N. J., is in the market for 400 tons each of No. 2 plain and No. 2X foundry for September to December delivery. Keen competition for going business has brought out prices of as low as \$16.50, base Buffalo, on foundry iron, although many sales are being closed at 25c. to 50c. higher. Eastern New York producers are confronted with the necessity of cutting their quotation of \$18, furnace, to meet delivered prices in this district from other centers. The barge rate on pig iron from Buffalo to New York harbor has been reduced 50c. a ton to \$2 on early shipments. The rate is expected to advance again when the wheat movement sets it.

Prices per gross ton, delivered New York district:

Buffalo No. 2 fdy., sil. 1.75 to 2.25 (all rail).....	\$21.41 to \$21.91
No. 2 plain fdy. (by barge, del'd alongside in lighterage limits N. Y. and Brooklyn).....	18.50 to 19.00
East. Pa. No. 2 fdy., sil. 1.75 to 2.25.....	21.39 to 22.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75.....	21.89 to 23.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25.....	22.39 to 23.52

Freight rates: \$4.91 from Buffalo, \$1.39 to \$2.52 from eastern Pennsylvania.

Reinforcing Bars.—The market has been quiet during the last week, with no large jobs reported let. July, however, promises to be an exceptionally good month for most of the distributors in this territory, as a result of the number of large orders that have been placed. Small-lot purchases are being made at a rate that is considered fairly satisfactory for this time in the year. Prices are unchanged.

Prices per lb. on billet steel reinforcing bars: From mill, 1.90c., Pittsburgh. Out of New York warehouse, 3.05c. to 3.15c., delivered at job. Out of Youngstown warehouse, 2.40c., Youngstown, or 2.77½c., delivered New York.

Finished Steel.—Activity in structural steel continues at a very high rate for midsummer, with indications that bookings for July may exceed those of June, which was an exceptional month. This is more than can be said, however, of other finished steel lines, which are in moderate demand, small orders predominating. The week has brought no change in the situation either in point of total tonnage or in prices. Plates, shapes and bars are being held at the quotations which have been published in the past few weeks, namely 1.80c. on plates, with an occasional 1.75c. on large lots; 1.80c. to 1.85c. on bars, and 1.70c. and 1.75c. on the ordinary lots of shapes, with lower prices on the exceptionally attractive specifications. Prices on sheets and hot and cold rolled strip steel are being well maintained. Except for an inquiry for 2000 tons mentioned last week, on which no action apparently has been taken, there has been no prospective sheet tonnage of sufficient size to be tempting, but at the same time the lack of a demand large enough to give mills the tonnage they desire for satisfactory operation has not brought weakening anywhere along the line. Most of the makers of wire nails are quoting \$2.55 per 100-lb. keg, but

they are still available at \$2.50. The market for alloy steel bars is quiet, but some consumers have tried to purchase No. 2300 3½ per cent nickel and No. 3100 nickel chromium bars at 4.15c. and 3.15c., Pittsburgh, respectively. These prices have come out for large lots in the Detroit district, but producers represented here are making a firm stand to maintain prices \$2 a ton higher on the small tonnages which make up the bulk of consumption in this territory. The largest structural steel award of the week is 6000 tons for a bank and office building at Wall and William Streets.

Mill prices per lb. delivered New York: Soft steel bars, 2.14c. to 2.24c.; plates, 2.09c. to 2.19c.; structural shapes, 1.99c. to 2.14c.; bar iron, 2.14c.

Warehouse Prices, f.o.b. New York

	Base per Lb.	
Plates and structural shapes.....	3.34c.	
Soft steel bars and small shapes.....	3.24c.	
Iron bars.....	3.24c.	
Iron bars, Swedish charcoal.....	7.00c. to 7.25c.	
Cold-finished steel shafting and screw stock—		
Rounds and hexagons.....	4.00c.	
Flats and squares.....	4.50c.	
Cold-rolled strip, soft and quarter hard..	5.75c.	
Hoops.....	4.49c.	
Bands.....	3.99c.	
Blue annealed sheets (No. 10 gage).....	3.89c.	
Long terme sheets (No. 24 gage).....	5.80c.	
Standard tool steel.....	12.00c.	
Wire, black annealed.....	4.50c.	
Wire, galvanized annealed.....	5.15c.	
Tire steel, 1½ x ½ in. and larger.....	3.30c.	
Smooth finish, 1 to 2½ x ¼ in. and larger.....	3.65c.	
Open-hearth spring steel, bases.....	4.50c. to 7.00c.	
Machine bolts, cut thread: Per Cent Off List		
¾ x 6 in. and smaller.....	50 to 50 and 10	
1 x 30 in. and smaller.....	45 to 50	
Carriage bolts, cut thread:		
¾ x 6 in. and smaller.....	50 and 10 to 60	
¾ x 20 in. and smaller.....	50 to 50 and 5	
Coach screws:		
¾ x 6 in. and smaller.....	50 and 10 to 60	
1 x 16 in. and smaller.....	50 to 50 and 5	
Boiler Tubes— Per 100 Ft.		
Lap welded steel, 2-in.....	\$17.33	
Seamless steel, 2-in.....	20.24	
Charcoal iron, 2-in.....	25.00	
Charcoal iron, 4-in.....	67.00	
Discounts on Welded Pipe		
Standard Steel—	Black	Galv.
½-in. butt.....	46	29
¾-in. butt.....	51	37
1-in. butt.....	53	39
2½-6-in. lap.....	48	35
7 and 8-in. lap.....	44	17
11 and 12-in. lap.....	37	12
Wrought Iron—		
½-in. butt.....	4	+19
¾-in. butt.....	11	+9
1-1½-in. butt.....	14	+6
2-in. lap.....	5	+14
3-6-in. lap.....	11	+6
7-12-in. lap.....	3	+16
Tin Plate (14 x 20 in.)		
	Prime	Seconds
Coke, 100 lb. base box.....	\$6.45	\$6.20
Charcoal, per box—	A	AAA
IC.....	\$9.70	\$12.10
IX.....	12.00	14.25
IXX.....	13.90	16.00
Terne Plate (14 x 20 in.)		
IC—20-lb. coating.....	\$10.00 to \$11.00	
IC—30-lb. coating.....	12.00 to 13.00	
IC—40-lb. coating.....	13.75 to 14.25	
Sheets, Box Annealed—Black, C. R. One Pass		
	Per Lb.	
Nos. 18 to 20.....	4.00c.	
No. 22.....	4.15c.	
No. 24.....	4.20c.	
No. 26.....	4.30c.	
No. 28*	4.45c.	
No. 30.....	4.70c.	
Sheets, Galvanized		
	Per Lb.	
No. 14.....	4.35c. to 4.60c.	
No. 16.....	4.45c. to 4.70c.	
No. 18.....	4.60c.	
No. 20.....	4.75c.	
No. 22.....	4.80c.	
No. 24.....	4.95c.	
No. 26.....	5.20c.	
No. 28*	5.45c.	
No. 30.....	5.85c.	

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Warehouse Business.—Purchasing from stock has declined to a few small orders with black and galvanized sheets moving in moderate volume and occasional sales of structural material reported. Prices, despite the quietness of the market, continue fairly firm, with only occasional small concessions reported on sheets or the more desirable tonnages of structural steel. It is reported that a Youngstown warehouse dealing in sheet seconds may establish a stock in the New York district.

Cast Iron Pipe.—Buying is limited to small lots, with occasional exceptions, such as the recent purchase by White Plains, N. Y., of about 2000 tons, mostly 20-in. pipe, from the Warren Foundry & Pipe Co. Among current lettings are about 600 tons of pipe for Homer, Pa., bids on which open July 28, and about 200 tons involved in a contract for the Department of Water Supply, Gas and Electricity, New York, bids on which opened July 26. Prices continue soft, with competition keen for the small volume of business appearing in a generally quiet market.

Prices per net ton, delivered New York: Water pipe 6-in. and larger, \$42.25 to \$44.25; 4-in. and 5-in., \$47.25 to \$49.25; 3-in., \$57.25 to \$59.25; Class A and gas pipe, \$4 to \$5 extra.

Coke.—The downward tendency of prices is not so much in evidence on foundry grade, which continues at \$4 to \$4.50 per net ton, Connellsville, for prompt shipment. Standard furnace coke is quotable at \$3 to \$3.25, Connellsville, and occasional sales of distress carloads are reported at less than \$3 per ton. Delivered prices of Connellsville foundry coke are: To northern New Jersey, \$8.03 to \$8.53; New York or Brooklyn, \$8.79 to \$9.29; Newark or Jersey City, N. J., \$7.91 to \$8.41 per net ton. By-product foundry coke is unchanged at \$9.59 to \$10.77 per net ton, delivered Newark or Jersey City.

Old Material.—The downward trend of prices, so much in evidence recently, seems to have temporarily halted, and quotations are substantially unchanged. An eastern Pennsylvania mill which had been endeavoring to purchase turnings at \$10.50 per ton, delivered, justifying a brokers' buying price of \$10 per ton, was unable to secure sufficient tonnage at that figure, and brokers are again offering \$10.50 per ton, delivered. A similar situation developed on stove plate, and brokers are again offering \$12 per ton, delivered, on a \$3.50 freight rate. The market for rerolling rails is so limited that dealers are continuing in many cases to ship them on No. 1 heavy melting steel contracts, despite the low price it nets them after deduction of 50c. a ton for the rails has been made. No. 1 heavy melting steel is unchanged at \$13.50 per ton, delivered eastern Pennsylvania, with shipments going forward to Bethlehem and Phoenixville, Pa., and Claymont, Del.

Dealers' buying prices per gross ton, New York:

No. 1 heavy melting steel.....	\$10.00 to \$10.85
Heavy melting steel (yard).....	6.75 to 7.00
No. 1 heavy breakable cast.....	10.75 to 12.50
Stove plate (steel works).....	8.00 to 8.50
Locomotive grate bars.....	8.00 to 8.50
Machine shop turnings.....	6.50 to 7.00
Short shoveling turnings.....	7.00 to 7.50
Cast borings (blast furnace or steel works).....	7.00 to 7.50
Mixed borings and turnings.....	7.00 to 7.50
Steel car axles.....	15.75 to 16.25
Iron car axles (nom.).....	23.00 to 23.50
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	8.25 to 8.75
Forge fire.....	6.50 to 7.00
No. 1 railroad wrought.....	11.50 to 12.00
No. 1 yard wrought, long.....	10.50 to 11.00
Rails for rolling.....	10.25 to 10.75
Cast iron carwheels.....	10.75 to 11.25
Stove plate (foundry).....	8.50 to 9.75
Malleable cast (railroad).....	10.75 to 11.25
Cast borings (chemical).....	11.75 to 12.75

Prices per gross ton, delivered local foundries:

No. 1 machinery cast.....	\$14.00 to \$14.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	12.50 to 13.00
No. 2 cast (radiators, cast boilers, etc.).....	11.50 to 12.00

Liquidation of the Dominion Steel Corporation, Ltd., Montreal, has been ordered stayed, pending the hearing of an appeal by the Supreme Court of Nova Scotia on Aug. 2.

Cleveland

Demand for Plates, Shapes and Bars Improves—Alloy Steel Bars Weaker

CLEVELAND, July 26.—The demand for steel bars, plates and structural material shows some improvement over what it was earlier in the month. While orders are still for small lots, their number has increased. Business in other finished lines that go largely to the automotive industry, particularly sheets and hot-rolled strip steel, continues very dull. The market is firm on all steel products except alloy steel bars, which have shown further weakness in some grades.

Automobile companies are buying steel in very small lots, and their purchases have been disappointingly light this month. It is not expected that there will be a marked pick-up in the demand from this source before Aug. 15. New motor cars are being placed on the market, and the manufacturers evidently are waiting to see how these are received before ordering material in liberal quantities and arranging for enlarged production schedules. The automotive industry so far as it applies to the lower-priced cars is marking time, pending the appearance of the new line of cars of the Ford Motor Co. The Ford company made some additional purchases of steel during the week, but the small size of its orders indicates that it will start the production of cars in a rather limited way.

There is a fair increase in the demand for plates in car lots from builders of small tanks and from some other consuming industries. Inquiry has dropped off in the building field, but fabricators are ordering structural shapes in fair volume. Steel bars, plates and structural material are firm in this market at 1.80c., Pittsburgh, and considerable of the small-lot business is going at 1.85c. One Ohio mill is shading to 1.75c., Pittsburgh, on plates where necessary to meet competition in the East and to overcome freight disadvantage in the Chicago territory. The local mill price on steel bars is unchanged at 1.80c. to 1.85c., Cleveland. Wire products are moving in fair volume, and the price of \$2.55, Cleveland, on nails now appears to be firmly maintained.

Pig Iron.—Cleveland producers continue to take a good volume of business and their sales during the week aggregated 50,000 tons in foundry and malleable iron, a slight gain over the previous week. The activity was centered largely in Michigan, Indiana and western New York. The bulk of the sales were in small lots, which were numerous, the largest being for 3000 tons. While some contracts were for the last half, most of the orders were for early shipment or the current quarter. Keenly competitive conditions still give the market a weak tone, but prices are no lower than they have been recently. The Cleveland furnace price for outside shipment is nominally \$17.50, but local producers are evidently still going to \$17, furnace, for shipment to some highly competitive points. The 50c. a ton reduction to \$18.50, furnace, in Michigan by producers serving that territory seems to have accomplished its purpose of shutting Cleveland iron out of that State. Considerable business placed during the week came from the automotive, furnace and stove industries. A Columbus, Ohio, foundry placed a round lot of malleable iron which did not go to a Lake

Warehouse Prices, f.o.b. Cleveland

	Base per lb.
Plates and structural shapes.....	3.00c.
Soft steel bars.....	3.00c.
Reinforcing steel bars.....	2.25c. to 3.00c.
Cold-finished rounds and hexagons.....	3.65c.
Cold-finished flats and squares.....	4.15c.
Hoops and bands.....	3.65c.
Cold-finished strip.....	*5.95c.
Black sheets (No. 24).....	3.75c.
Galvanized sheets (No. 24).....	4.65c.
Blue annealed sheets (No. 10).....	3.25c.
No. 9 annealed wire, per 100 lb.....	\$2.90
No. 9 galvanized wire, per 100 lb.....	3.35
Common wire nails, base, per keg.....	2.90

*Net base, including boxing and cutting to length.

furnace. Its inquiry was for 3000 to 5000 tons. The American Steel Foundries is inquiring for 3000 to 5000 tons of basic iron for its Alliance, Ohio, plant. One Southern furnace interest which met the recent reduction to \$17.25, base Birmingham, for Southern foundry iron has gone back to \$18. Furnaces are still feeling the effect of the curtailment of operations in the automotive industry although their July shipments will nearly equal the tonnage shipped in June. But shipping orders in the latter month were lighter than in May.

Prices per gross ton at Cleveland:

N'th'n No. 2 fdy., sil. 1.75 to 2.25.....	\$19.00
Southern fdy., sil. 1.75 to 2.25.....	23.25
Malleable.....	19.00
Ohio silvery, 8 per cent.....	31.50
Basic, Valley furnace.....	17.50
Standard low phos., Valley fur.....	27.50

Prices, except on basic and low phosphorus, are delivered Cleveland. Freight rates: 50c. from local furnaces; \$3 from Jackson, Ohio; \$6 from Birmingham.

Semi-Finished Steel.—Orders are fair, but are mostly against contracts. Prices are unchanged at \$33.50 to \$34, Cleveland, for sheet bars, and \$33 for billets and slabs. Locally wire rods are unchanged at \$43, Cleveland.

Sheets.—Several orders for automobile body sheets in good-sized lots were placed during the week, but other grades are very dull. New demand from the automotive industry this month on the whole has been very light. Regular quotations are being adhered to in spite of the fact that mills have little tonnage on their books and need orders.

Strip Steel.—Many consumers of hot-rolled strip steel still have stocks, bought at lower than present prices, that are expected to last them well into August. Cold-rolled strip is in light demand. *Some inquiries are coming from the automotive industry, but they call only for small lots. The market is firm on both hot and cold-rolled strip.

Reinforcing Bars.—Very little new work is being figured on requiring lots of any size. Locally rail steel bars, which are quoted at 1.65c., mill, are unable to meet the competition of a Cleveland maker of billet steel bars.

Warehouse Business.—Sales are fair. While orders usually fall off in July, the volume this month is only slightly below that of June. The demand for sheets is light. All prices are being well maintained.

Iron Ore.—Lake shipments are holding up to the June rate, but the July movement will be fully 1,000,000 tons below that of July last year, when water shipments passed the 10,000,000-ton mark. Shippers are well up on their orders, and it is expected that if any change is made in the rate of movement in the next two or three months, it will be a decrease.

Coke.—Foundry heating coke is somewhat firmer and is now quoted at \$2.75, Connellsville, for early shipment. Connellsville foundry coke is unchanged at \$4.25 to \$5.35, ovens. There is practically no new demand.

Alloy Steel.—Highly competitive conditions prevail in the market, and these have brought further price concessions of from \$1 to \$2 a ton on some of the more generally used grades. The volume of business is fair.

Bolts, Nuts and Rivets.—The demand for bolts and nuts continues rather light, but prices are firm. The advance on large rivets to \$3 per 100 lb. to non-contracting customers will affect few buyers, as practically all consumers except those buying very small lots placed contracts at \$2.75.

Old Material.—The market shows a firmer tone on steel-making and blast furnace grades, which have advanced 25c. a ton. With the decreased production of scrap, dealers having short orders are finding it necessary to pay a little more for old material than recently. Dealers are paying up to \$14.15 for heavy melting steel to fill an order for 15,000 tons recently placed locally by a Cleveland steel plant and \$10.50 to \$10.75 for blast furnace scrap for the same consumer. The August scrap lists that have been issued by some of the Michigan automobile companies contain close to the usual monthly tonnage. Lists of various units of the Gen-

eral Motors Corporation aggregate 10,000 tons, and Dodge Brothers, Inc., is offering 3500 tons.

Prices per gross ton, delivered consumers' yards:

Basic Open-Hearth Grades	
No. 1 heavy melting steel.....	\$14.00 to \$14.25
No. 2 heavy melting steel.....	13.50 to 13.75
Compressed sheet steel.....	13.25 to 13.50
Light bundled sheet stampings.....	11.50 to 12.00
Drop forge flashings.....	12.50 to 13.00
Machine shop turnings.....	9.25 to 9.50
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	13.75 to 14.00
No. 1 busheling.....	11.50 to 11.75
Pipes and flues.....	10.00 to 10.50
Steel axle turnings.....	12.50 to 13.00

Acid Open-Hearth Grades	
Low phosphorus forging crops.....	16.50 to 17.00
Low phosphorus, billet bloom and slab crops.....	17.00 to 17.50
Low phosphorus sheet bar crops.....	16.00 to 16.50
Low phosphorus plate scrap.....	16.00 to 16.50

Blast Furnace Grades	
Cast iron borings.....	10.50 to 10.75
Mixed borings and short turnings.....	10.50 to 10.75
No. 2 busheling.....	10.50 to 10.75

Cupola Grades	
No. 1 cast.....	16.50 to 17.00
Railroad grate bars.....	12.00 to 12.50
Stove plate.....	12.00 to 12.50
Rails under 3 ft.....	18.00 to 18.50

Miscellaneous	
Railroad malleable.....	15.50 to 16.00
Rails for rolling.....	16.25 to 16.50

Philadelphia

Steel and Pig Iron Buying Continue at Very Moderate Rate

PHILADELPHIA, July 26.—Business in steel and pig iron continues at the retarded rate of previous weeks of this month. In sales offices there is a disposition to look upon the situation more hopefully, but it is admitted that there is little tangible basis for improved sentiment so far as orders or inquiries are concerned. What the steel trade sees is that production is down to a point where it undoubtedly is not in excess of consumption, that stocks in the hands of consumers are low and that prices probably have struck bottom. The small orders which buyers are placing leave little to be gained by the consumer in pressing for further concessions, and likewise such orders are not tempting enough to the mills to cause any weakening. The most attractive tonnages recently have been in the structural market, but the mills are more strongly resisting efforts of fabricators to force prices lower, and apparently with some success. July sales of steel will fall below those of June, but attention of sellers is now directed to next month, when it is believed that the normal swelling of demands in anticipation of autumn business expansion will make itself felt.

Pig Iron.—With New York State iron continuing as an important factor in this district and with many melters having more iron in their yards or on order than they need for their present volume of casting

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Plates, ¼-in. and heavier.....	2.80c. to 3.00c.
Plates, ½-in.....	3.00c. to 3.20c.
Structural shapes.....	2.65c. to 3.00c.
Soft steel bars, small shapes and iron bars (except bands).....	2.70c. to 3.20c.
Round-edge iron.....	3.50c.
Round-edge steel, iron finished, 1½ x 1½ in.....	3.50c.
Round-edge steel, planished.....	4.30c.
Reinforcing steel bars, square, twisted and deformed.....	3.00c.
Cold-finished steel, rounds and hexagons.....	4.00c.
Cold-finished steel, squares and flats.....	4.50c.
Steel hoops.....	3.85c. to 4.15c.
Steel bands, No. 12 gage to ⅞-in., inclusive.....	3.60c. to 3.90c.
Spring steel.....	5.00c.
Black sheets (No. 24).....	4.35c.
Galvanized sheets (No. 24).....	5.20c.
Blue annealed sheets (No. 10).....	3.30c.
Diamond pattern floor plates—	
¼-in.....	5.30c.
⅞-in.....	5.50c.
Rails.....	3.20c.
Swedish iron bars.....	6.60c.

business, the immediate outlook for the sale of merchant iron hereabouts does not appear promising. There has been a slight quickening of demand in the past week, but sales have not been large, and the improvement, if such it may be called, is noticeable only because of the extreme dullness of preceding weeks. Sales of foundry iron have been made at \$20.50, furnace, for the base grade, but where competition is keen furnaces have sometimes been obliged to go to \$20, base. The melt of basic pig iron continues at a very low point, but it is believed that one or two steel companies will soon be in the market, having only a few weeks' supply purchased.

Prices per gross ton at Philadelphia:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$20.76 to \$21.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.26 to 21.76
East. Pa. No. 1X, 2.25 to 2.75 sil.	21.76 to 22.26
Basic (delivered eastern Pa.)	20.75
Gray forge	21.00 to 21.50
Malleable	21.50 to 22.00
Standard low phos. (f.o.b. New York State furnace)	25.00
Copper bearing low phos. (f.o.b. furnace)	24.50 to 25.00
Virginia No. 2 plain, 1.75 to 2.25 sil.	26.67
Virginia No. 2X, 2.25 to 2.75 sil.	27.17

Prices, except on low phosphorus, are delivered Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$5.17 from Virginia furnaces.

Plates.—Considering that the average order for plates received by Eastern mills is about 10 tons and that orders for a full carload are not frequent, buyers are not pressing for price concessions. These less-than-carload orders take prices of 1.80c. and 1.85c., Pittsburgh, but a consumer with a more attractive specification can usually obtain quotations of 1.75c. Eastern mills are averaging less than a '50 per cent. operation, and while the number of orders was slightly on the increase during the past week, the total tonnage was not sufficient to increase operating schedules.

Structural Shapes.—Miscellaneous small orders for shapes are a trifle more numerous. A leading Eastern producer has booked large tonnages this month and last, but much of this business has come from New York and other territories rather than from Philadelphia. The volume of fabricated steel business in the Philadelphia district is light. The price situation continues virtually unchanged, although resistance is being offered by the mills to the extreme concessions which have recently been given on large tonnages. No real strengthening has occurred, but further declines may have been checked. Carload and smaller lots are being sold at 1.70c. to 1.80c., Pittsburgh, while on large lots the concessions are \$1 or \$2 below the lower figure.

Bars.—The light demand for steel bars is one of the weakest spots in the steel situation. Although all producers are anxious for tonnage, there is so little to be had that price concessions probably would not turn the trick and producers are not offering them. Quotations are 1.80c. and 1.85c., Pittsburgh, but the former price is applying even on most of the small lots. Bar iron is quoted at 2.12c., Philadelphia.

Sheets.—Buying is at a minimum, but prices are holding. In this district there has been no indication of a breaking away from published prices, which are 2.25c. for blue annealed, 3c. for black and 3.85c. for galvanized, Pittsburgh base.

Imports.—Pig iron imports last week amounted to 2302 tons, of which 2002 tons came from England and the remainder from the Netherlands. Steel imports were 420 tons, as follows: Structural shapes, 237 tons from Belgium, 35 tons from Germany and 5 tons from France; bars, 98 tons from France and 31 tons from Belgium; bands, 14 tons from Belgium. Two thousand tons of chrome ore came from Portuguese Africa.

Old Material.—The better tone of the scrap market, reported a week ago, continues, but there has not been enough interest among consumers to start any real upward movement. When scrap users come into the market they will undoubtedly find that sellers are not anxious to take on tonnages at the low prices that have recently prevailed. A purchase of blast furnace scrap has stiffened the market for that grade, which is now quotable at \$10.50 to \$11, while a steel company has

bought several thousand tons of machine shop turnings at \$11 after unsuccessful efforts to buy at \$10.50. Small lots were coming out at the latter price, but tonnages were not to be had. Stove plate and grate bars have also strengthened, so that \$12.50 is now the minimum, but also the maximum.

Prices per gross ton, delivered consumers' yards, Philadelphia district:

No. 1 heavy melting steel	\$13.00 to \$14.00
Scrap T rails	13.00 to 13.50
No. 2 heavy melting steel	11.50 to 12.00
No. 1 railroad wrought	15.50 to 16.00
Bundled sheets (for steel works)	10.50 to 11.00
Machine shop turnings (for steel works)	11.00
Heavy axle turnings (or equivalent)	12.50 to 13.00
Cast borings (for steel works and rolling mill)	11.00
Heavy breakable cast (for steel works)	15.50
Railroad grate bars	12.50
Stove plate (for steel works)	12.50
No. 1 low phos., heavy, 0.04 per cent and under	18.00 to 18.50
Couplers and knuckles	15.50 to 16.00
Roller steel wheels	15.50 to 16.00
No. 1 blast furnace scrap	10.00 to 10.50
Machine shop turnings (for rolling mill)	10.50 to 11.00
Wrought iron and soft steel pipes and tubes (new specifications)	12.50
Shafting	17.50 to 18.00
Steel axles	19.00 to 20.00
No. 1 forge fire	11.00
Steel rails for rolling	16.00
Cast iron carwheels	15.00 to 15.50
No. 1 cast	16.00 to 16.50
Cast borings (for chemical plant)	15.00 to 16.00

Chromium Plating

A study of the action of the so-called "acid" bath recommended for chromium plating by Carveth and Curry, the "neutral" bath suggested by Sargent, and the "basic" solutions used by the United States Bureau of Engraving and Printing, led H. E. Haring and W. P. Barrows to conclude that, after operation for some time, all of these reach exactly the same composition (Technologic Paper No. 346, United States Bureau of Standards). Recent commercialization of the process has therefore been due not to a change in the plating baths, but to a realization that close control of the correct operating conditions must be maintained. Baths of moderate concentration in CrO_3 and SO_4 give the best current efficiency without an undue increase in resistance. Solutions satisfactorily used at the Bureau of Engraving and Printing are

CrO_3	33.5 oz. per gal.
H_2SO_4	0.34 oz. per gal.

or

CrO_3	33.5 oz. per gal.
$\text{Cr}_2(\text{SO}_4)_3$	0.44 oz. per gal.

Combined chromic acid in any form seems to serve no useful purpose.

Lead anodes are perfectly satisfactory, and should be as large as convenient. For bright deposits, best temperature and current conditions depend upon the composition and concentration of the bath and the nature of the metal being plated, and these conditions must be determined by trial and experience.

Haring and Barrows believe that the low throwing power of chromium (or the ability to coat irregular and recessed objects) is inherent to the metal and can be improved only by ingenious arrangements of the work, the racks and the anodes.

In a survey of the airway facilities in the United States, the Department of Commerce found that there are 864 airports and intermediate landing fields. William P. MacCracken, Jr., Assistant Secretary for Aeronautics, predicts that by the end of the current year about 1000 airports and intermediate fields will have been established in the United States.

Production of automobiles in Canada in June, as reported by the Dominion Bureau of Statistics, were 16,470 passenger cars and 2738 trucks. This is a sharp decline from the May production of 21,991 passenger cars and 3717 trucks, and represents the lowest output since February. In June, 1926, production was 18,818 passenger cars and 2933 trucks.

San Francisco

Greater Interest in Foreign Steel— Buying Is Light on Pacific Coast

SAN FRANCISCO, July 23 (*By Air Mail*).—Indications that local buyers are taking a stronger interest in foreign steel and that importers are becoming more active have been conspicuous developments in a week of light buying in all departments of the market. Foreign structural material was quoted during the past week to a large local buyer at 1.57c., c.i.f., duty paid, San Francisco. This is the lowest quotation that is known to have been made this year on foreign shapes.

Incidentally, a large local user of sheets is understood to have received 1000 tons from Belgium during the first half. This has been reflected especially in new low quotations on steel barrels and similar products.

In regard to the advance of \$3 a ton in ocean freight rates on steel shipped from Atlantic ports via the Panama Canal to the Pacific Coast, which becomes effective Aug. 1, it is understood that Eastern mills are willing to protect local buyers later than Aug. 1, provided they receive notification as to the amount of tonnage that will be required "within a reasonable time after the date that the change in ocean freight rates becomes effective."

Pig Iron.—Buying is limited to pig iron for spot shipment. The local foundry situation is still clouded by labor difficulties and keen competition. Quotations are unchanged.

Prices per gross ton at San Francisco:

*Utah basic	.....	\$25.00 to \$26.00
*Utah foundry, sil. 2.75 to 3.25	.....	25.00 to 26.00
**Indian foundry, sil. 2.75 to 3.25	.....	25.00
**German foundry, sil. 2.75 to 3.25	.....	24.25

*Delivered San Francisco.

**Duty paid, f.o.b. cars San Francisco.

Shapes.—Lettings of fabricated structural steel during the week total about 3000 tons, and fresh inquiry calls for approximately 4500 tons. The largest individual letting, 2000 tons for crossing towers for the Southern California Edison Co., Los Angeles, was taken by the Baker Iron Works of that city. The largest individual inquiry, 2000 tons, is for a hotel building in San Francisco. The Columbia Steel Corporation, San Francisco, plans to build an addition to its plant at Pittsburg, Cal., which will call for 250 tons. New low quotations on foreign structural material have been made during the week, the lowest having been 1.57c., c.i.f., duty paid, San Francisco. Eastern mills continue to quote plain material at 2.35c., c.i.f. Coast ports.

Plates.—No letting of 100 tons of more has been reported during the week, and fresh inquiry is confined to small lots. Several projects are in preliminary stages of development, but there is little of importance being figured in the local market at present. Eastern mills continue to quote plates at 2.30c., c.i.f. Coast ports, although 2.25c. is obtainable on desirable tonnages.

Bars.—In reinforcing bars there have been a number of lettings for small lots recently, aggregating approximately 300 tons. Jobs calling for 100 tons or more have been scarce. Two buildings, one in Stockton, Cal., and the other in Sacramento, Cal., each called for 300 tons during the week, and both were taken by the Steel Service Corporation, San Francisco. Pending projects require about 1500 tons, of which 1000 tons is for a bridge in Los Angeles. Local concrete

Warehouse Prices, f.o.b. San Francisco

Base per Lb.

Plates and structural shapes	.....	3.10c.
Soft steel bars	.....	3.10c.
Small angles, $\frac{3}{8}$ -in. and over	.....	3.10c.
Small angles, under $\frac{3}{8}$ -in.	.....	3.60c.
Small channels and tees, $\frac{3}{4}$ -in. to 2 $\frac{1}{4}$ -in.	.....	3.70c.
Spring steel, $\frac{1}{4}$ -in. and thicker	.....	5.10c.
Black sheets (No. 24)	.....	5.15c.
Blue annealed sheets (No. 10)	.....	3.85c.
Galvanized sheets (No. 24)	.....	5.95c.
Rivets	.....	5.50c.
Common wire nails, base per keg	.....	\$3.45
Cement coated nails, 100-lb. keg	.....	3.45

bar jobbers continue to quote as follows: 2.75c. to 2.85c., base, per lb., on lots of 200 tons, and 3c. to 3.10c., base, on less-than-carload lots.

Cast Iron Pipe.—The only letting of importance during the past week was 1658 tons of 4, 10 and 12-in. Class B cast iron pipe for the city of Clackamas, Ore., which was taken by the Wright Construction Co., Aberdeen, Wash. Little of interest has come up for bids. While lower quotations are understood to have been made recently, cast iron pipe, 6-in. and larger, is quotable at \$43 per ton. f.o.b. dock San Francisco.

Coke.—Fresh inquiry is confined to small lots for immediate requirements for foundry use. Incidentally, it may be stated that virtually all of the coke used on the Pacific Coast is foundry coke. There is practically no demand either for heating or domestic coke. The larger part of the foundry fuel consumed here is imported from England or the Continent. Local importers quote foundry coke as follows: English beehive, \$16 to \$17 per net ton at incoming dock; English by-product, \$12 to \$13, and German by-product, \$11.50 to \$12.

Toronto

Algoma Rail Mill to Resume—Pig Iron and Scrap Quiet

TORONTO, ONT., July 26.—While the Canadian pig iron market is devoid of important sales or inquiries, the general volume of small tonnage business continues good. Future buying is not a feature of the present market, although melters are placing orders against contract at frequent intervals. Business has been affected by the summer holiday season, but not so extensively as in other years. The daily melt remains high in the Canadian iron and steel industry. While some price shading has been reported in the Montreal market, the reduction has not been general.

A review of the six months ended with June 30 shows that pig iron prices were highest in January. Because of restricted buying and a tendency toward lower levels in the United States, prices declined in February and remained stable or slightly under the February level for the remainder of the half year. The Dominion Bureau of Statistics index numbers for iron and its products (1913 price-100) showed a narrow range varying from 145.5 in January to 144.4 in February and 143.7 in April, and thereafter remaining stationary, closing the half year at 143.5.

Prices per gross ton:

Delivered Toronto	
No. 1 foundry, sil. 2.25 to 2.75	.....\$24.10
No. 2 foundry, sil. 1.75 to 2.25	.....24.10
Malleable	.....24.10
Delivered Montreal	
No. 1 foundry, sil. 2.25 to 2.75	.....26.50
No. 2 foundry, sil. 1.75 to 2.25	.....26.50
Malleable	.....26.50
Basic	.....25.50
Imported Iron at Montreal Warehouse	
Summerlee	.....36.00
Carron	.....36.00

Rails.—The Algoma Steel Corporation, Sault Ste. Marie, Ont., will reopen its rail mill Aug. 1. The company has recently secured a rail contract from the Canadian Pacific Railway. The Dominion Iron & Steel Corporation, Sydney, N. S., is now rolling a 10,000-ton rail order for that railroad. By the time these orders are completed it is believed that other rail business will make its appearance from both the Canadian Pacific and Canadian National lines. The Algoma Steel Corporation has spent approximately \$300,000 on improvements to its rail mill and is now in a position to roll 39-ft. rails, the standard rail now demanded by Canadian railroads.

Old Material.—The market is without feature either as regards price or demand. Sales for the week have been confined to small tonnages of special lines of scrap required for the immediate needs of buyers, and there have been no large transactions involved. The

export demand is limited to small tonnages, with no outstanding transactions reported for the week. Prices remain unchanged despite the softening undertone.

Dealers' buying prices:

	Toronto	Montreal
<i>Per Gross Ton</i>		
Heavy melting steel.....	\$10.50	\$9.00
Rails, scrap.....	11.00	10.00
No. 1 wrought.....	11.00	14.00
Machine shop turnings.....	8.00	7.50
Boiler plate.....	8.00	8.00
Heavy axle turnings.....	8.50	8.50
Cast borings.....	8.50	7.50
Steel turnings.....	8.00	8.00
Wrought pipe.....	6.00	6.00
Steel axles.....	15.00	17.00
Axles, wrought iron.....	17.00	19.00
<i>Per Net Ton</i>		
No. 1 machinery cast.....	16.00	18.00
Stove plate.....	10.00	13.00
Standard carwheels.....	14.00	16.00
Malleable scrap.....	14.00	14.00

Birmingham

Better Buying of Pig Iron—Cast Pipe Weak, Scrap Dull

BIRMINGHAM, July 26.—Several orders for good-sized tonnages of pig iron have been received by furnace interests, and the probable production for the current quarter is rapidly being covered. The lower price base of \$17.25, Birmingham, for No. 2 city furnace has had more to do with buying than the actual requirements of melters, although a better feeling among consumers is reported. Pig iron output will be increased by the blowing in of the new No. 2 city furnace of the Sloss-Sheffield Steel & Iron Co. this week. This stack is a producer of foundry iron, with a capacity of 400 tons daily. Pig iron shipments have improved and surplus stocks on furnace yards are being reduced. Consumers in the home territory report little improvement in their operations. A small movement of pig iron has started to points just outside of the immediate territory into those sections where Southern iron for years has been used for mixture purposes.

Prices per gross ton, f.o.b. Birmingham district furnaces:

No. 2 foundry, 1.75 to 2.25 sil.....	\$17.25
No. 1 foundry, 2.25 to 2.75 sil.....	17.75
Basic.....	17.25
Charcoal, warm blast.....	29.00

Rolled Steel.—The reduction of steel output has not weakened market sentiment; in fact, new business in hand and in sight is in encouraging volume. Quotations of principal forms of finished steel are again reported firm. Structural steel fabricators find that smaller contracts are large enough in the aggregate to keep their shops busy. Additional smaller industries now being projected in this district are expected to swell the Southern demand for steel before the end of the year.

Cast Iron Pipe.—Quotations on pressure pipe are weak at \$34 to \$35 per net ton, Birmingham, for 6-in. and larger diameters. The aggregate of recent let-

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes....	3.40c.
Bars, soft steel or iron.....	3.30c.
Reinforcing bars.....	3.30c.
Hoops.....	4.00c. to 4.25c.
Bands.....	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares.....	4.35c.
Open-hearth spring steel.....	4.75c. to 5.00c.
Black sheets (No. 24).....	4.05c.
Galvanized sheets (No. 24).....	4.90c.
Blue annealed sheets (No. 10)...	3.60c.
Structural rivets.....	3.85c.
Small rivets.....	.65 per cent off list
No. 9 annealed wire, per 100 lb.....	\$3.00
Common wire nails, base per keg.....	2.95
Cement coated nails, base 100 lb. keg...	2.95
Chain, per 100 lb.....	7.55
<i>Net per 100 Ft.</i>	
Lap-welded steel boiler tubes, 2-in.....	\$18.00
4-in.....	38.00
Seamless steel boiler tubes, 2-in.....	19.00
4-in.....	39.00

tings is small, and curtailment of production has not been halted. Shipments are steady.

Coke.—The seasonal lull in coke is passing, and independent producers anticipate a steady increase in demand. No surplus stocks of coke are reported by this branch of the industry. The Alabama By-Products Corporation will be ready within 60 days to start the operation of 49 Koppers ovens, which are now approaching completion.

Old Material.—The market is at a standstill. Aside from the occasional movement of a single car of scrap, there is no activity.

Prices per gross ton, delivered Birmingham district consumers' yards:

Heavy melting steel.....	\$10.50 to \$11.00
Scrap steel rails.....	12.50 to 13.00
Short shoveling turnings.....	8.50 to 9.00
Cast iron borings.....	8.50 to 9.00
Stove plate.....	13.00 to 14.00
Steel axles.....	16.00 to 17.00
Iron axles.....	16.00 to 17.00
No. 1 railroad wrought.....	11.00 to 12.00
Rails for rolling.....	13.00 to 14.00
No. 1 cast.....	14.00 to 15.00
Tramcar wheels.....	12.50 to 13.50
Cast iron carwheels.....	12.00 to 13.00
Cast iron borings, chemical.....	13.00 to 13.50

Cincinnati

Belfont Furnace Blown Out—Tennessee Pig Iron Advanced

CINCINNATI, July 26.—The Belfont Steel & Wire Co., at Ironton, Ohio, has blown out its Belfont furnace. Since the Marting Iron & Steel Co. put down its Marting stack several weeks ago, there are now no merchant furnaces in operation in the Ironton district. Severe competition from northern Ohio producers is said to be responsible for this unfavorable development in the southern Ohio situation. High operating costs, together with an invasion by outside interests of the territory heretofore depending upon Ironton for its iron, have so narrowed the market for Ironton makers that they have been compelled to seek an outlet for their product by shipping it by water. At least one seller has a large stock in his yards and is trying to dispose of it on the basis of \$19, base Ironton. In some cases silicon differentials are waived, so that the price figures back to \$18.50 at the furnace. The Southern market is showing signs of strength. A Tennessee company has restored its former price of \$18, base Birmingham, after having booked substantial tonnages at 75c. a ton under that figure, while one Alabama furnace is understood to have made the same advance. Three important Alabama producers, however, are still seeking business at \$17.25, base Birmingham. Southern makers are estimated to have taken about 12,000 tons in the territory north of the Ohio River since the recent drop in price. Northern Ohio companies have been soliciting orders at \$17 to \$17.50, base furnace. Jackson County silvery iron furnaces have good order books and are adhering strictly to \$28.50, furnace, for 8 per cent. Inquiries are in small volume, and total sales the past week have been light.

Prices per gross ton, delivered Cincinnati:

So. Ohio fdy., sil. 1.75 to 2.25....	\$20.39 to \$20.89
So. Ohio malleable.....	20.14 to 20.89
Alabama fdy., sil. 1.75 to 2.25....	20.94
Alabama fdy., sil. 2.25 to 2.75....	21.44
Tennessee fdy., sil. 1.75 to 2.25...	21.69
Southern Ohio silvery, 8 per cent	30.39

Freight rates: \$1.89 from Ironton and Jackson, Ohio; \$3.69 from Birmingham.

Reinforcing Bars.—Bids are to be taken in the coming week on 125 tons of bars for the Christian R. Holmes Hospital, which is affiliated with the University of Cincinnati. New billet bars are quoted at 1.80c. to 1.85c., base Pittsburgh, and rail steel stock at 1.70c. to 1.75c., base mill. Mills are holding to these prices in the belief that concessions would not stimulate buying beyond the present rate.

Warehouse Business.—Business in July is showing the usual seasonal decline from June, the letdown having become more noticeable during the past week. Bars and tank plates are quiet, but sales of sheets and of

structural shapes have been of moderate proportions. Prices are even firmer than a week ago, and no change is anticipated in the near future.

Finished Material.—Slightly increased purchases by consumers, as well as a more optimistic feeling on the part of producers, have given a better tone to the market. The amount of structural work both under way and pending is unusual for this time of the year, and the larger fabricators are getting the bulk of the tonnage, the smaller shops in many cases being in need of work. The agricultural situation in western Ohio and in Indiana is regarded as fairly satisfactory, and the outlook for a good season on fence products is favorable. There has been little buying of wire goods this month, but prices have held well in the face of a paucity of orders. Some Eastern mills are quoting \$2.69 per keg, delivered Cincinnati, on common wire nails. This price is based on \$2.55 at Ironton, Ohio, plus a 14c. barge rate to this city. Other producers declare that they will not sell at less than \$2.75. In the sheet market, consumers are still buying odd lots to carry them over the slack period during late July and August. Specifications and orders from sheet metal manufacturers have been in large enough volume to offset the lack of business from other sources. Mills are of the opinion that the roofing trade in the fall will take substantial tonnages of galvanized sheets, which are already showing more activity. Automobile manufacturers who have deferred purchases are expected to contract for early fall requirements within the next two weeks. Sheet prices have become well established at 3c., base Pittsburgh, on black, 3.85c. on galvanized and 2.25c. on blue annealed stock. Bars are in light demand at the moment, with quotations ranging from 1.80c. to 1.85c., base Pittsburgh. Structural shapes and plates at 1.80c., base Pittsburgh, are moving at a slightly better rate.

Coke.—Specifications for by-product foundry coke are running slightly behind those in June, but shipments of by-product domestic coke show a small increase. Prices on all by-product grades are likely to remain unchanged during August, although no announcement to that effect has been made.

Foundry coke prices per net ton, delivered Cincinnati: By-products coke, \$9.52 to \$9.64; Wise County coke, \$7.59 to \$8.09; New River coke, \$10.09 to \$10.59. Freight rates: \$2.14 from Ashland, Ky.; \$2.59 from Wise County and New River ovens.

Old Material.—The undercurrent of better feeling that manifested itself a week ago has continued, and dealers are optimistic about the outlook for the next 30 to 60 days. Under the circumstances they are willing to pay prices for scrap that are in no way justified by the condition of the present market, relying upon favorable developments in the near future to justify their speculation. Little scrap is coming out at present, and dealers are holding the material they now possess in the hope that it will net them more several weeks hence. Prices of a few items have advanced 25c. to 50c. a ton. The Baltimore & Ohio has a list of about 20,000 tons closing Aug. 1.

Dealers' buying prices per gross ton f.o.b. cars, Cincinnati:

Heavy melting steel.....	\$12.00 to \$12.50
Scrap rails for melting.....	13.00 to 13.50
Loose sheet clippings.....	9.00 to 9.50
Champion bundled sheets.....	9.50 to 10.00
Cast iron borings.....	8.75 to 9.25
Machine shop turnings.....	7.50 to 8.00
No. 1 busheling.....	10.00 to 10.50
No. 2 busheling.....	7.50 to 8.00
Rails for rolling.....	13.50 to 14.00
No. 1 locomotive tires.....	14.25 to 14.75
No. 1 railroad wrought.....	12.00 to 12.50
Short rails.....	17.50 to 18.00
Cast iron carwheels.....	13.25 to 13.75
No. 1 machinery cast.....	17.50 to 18.50
No. 1 railroad cast.....	14.50 to 15.00
Burnt cast.....	8.50 to 9.00
Stove plate.....	10.00 to 10.50
Brake shoes.....	10.25 to 11.00
Railroad malleable.....	12.50 to 13.00
Agricultural malleable.....	12.00 to 12.50

The M. D. Friedman Co., Ashland, Ky., dealer in iron and steel scrap, has discontinued its Cleveland office, located in the Guarantee Title Building.

Boston

Pig Iron Prices Still Unsettled—Scrap Mart Has Stronger Tone

BOSTON, July 26.—Sales of pig iron in New England in the past week fell off materially. It is doubtful if 4000 tons was sold. Competition between Buffalo and east-of-Buffalo furnaces is still very keen, with the latter the more aggressive. Sales included one lot of 1000 tons of No. 2X, bought from an east-of-Buffalo furnace for third quarter shipment to a Worcester, Mass., machinery manufacturer. The original inquiry called for 600 tons. A Buffalo furnace offered iron at \$21.41 a ton, delivered; a stack east of Buffalo shaded that price, while a second east-of-Buffalo furnace cut the price still further, bringing the delivered cost to the foundry down to around \$21. Another sale of east-of-Buffalo iron, silicon 3.00 to 3.25, is reported at \$21.75 a ton, delivered. It is apparent that the aggressive furnaces are waiving differentials and submitting low prices on tonnages ranging from 100 tons upward.

Prices of foundry iron per gross ton, delivered to most New England points:

Buffalo, sil. 1.75 to 2.25.....	\$21.41 to \$21.91
Buffalo, sil. 2.25 to 2.75.....	21.41 to 22.41
East. Penn., sil. 1.75 to 2.25.....	23.65 to 24.15
East. Penn., sil. 2.25 to 2.75.....	24.15 to 24.65
Virginia, sil. 1.75 to 2.25.....	27.42
Virginia, sil. 2.25 to 2.75.....	27.92
Alabama, sil. 1.75 to 2.25.....	24.16 to 26.02
Alabama, sil. 2.25 to 2.75.....	24.66 to 26.52

Freight rates: \$4.91 from Buffalo, \$3.65 from eastern Pennsylvania, \$5.92 from Virginia, \$6.91 to \$8.77 from Alabama.

Coke.—The curve of by-product foundry coke shipments from New England ovens continues upward; yet the gain as compared with a week ago is comparatively slight. Indications are the upswing will be more rapid from now on, because there has been a sudden and unexpected increase in the New England melt of iron, particularly in Connecticut. Both the New England Coal & Coke Co. and the Providence Gas Co. are billing out foundry coke at \$12 a ton, delivered, within a \$3.10 freight rate zone. It is intimated that there will be no change in the price of fuel on Aug. 1, but possibly a change will be made later in that month.

Imports.—During the first half of July there were received at this port 627 tons of iron, made up of 500 tons English and 127 tons Dutch; 520 cast iron pipes; and 9082 tons of Newfoundland ore. In the first half of June, this year, imports included 1343 tons of pig iron and 305 cast iron pipes, while in the first half of July, last year, 2423 tons of pig iron and 12,631 tons of ore were received.

Cast Iron Pipe.—Brockton, Mass., will open bids July 29 for 100 tons of 6-in. pipe, the only prospective municipal business in the market. Pipe foundries continue to book orders privately, but business is not nearly so good as it was a month ago and competition is still keen among domestic foundries, with the result that prices remain unsettled. Foreign pipe has been less of a market factor of late, and imports have

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Plates.....	3.365c.
Structural shapes—	
Angles and beams.....	3.365c.
Tees.....	3.365c.
Zees.....	3.465c.
Soft steel bars and small shapes.....	3.265c.
Flats, hot-rolled.....	4.15c.
Reinforcing bars.....	3.265c. to 3.54c.
Iron bars—	
Refined.....	3.265c.
Best refined.....	4.60c.
Norway, rounds.....	6.60c.
Norway, squares and flats.....	7.10c.
Spring steel—	
Open-hearth.....	5.00c. to 10.00c.
Crucible.....	12.00c.
Tire steel.....	4.50c. to 4.75c.
Bands.....	4.015c. to 5.00c.
Hoop steel.....	5.50c. to 6.00c.
Cold rolled steel—	
Rounds and hexagons.....	4.05c.
Squares and flats.....	4.55c.
Toe calk steel.....	6.00c.

dropped off noticeably. Prices on domestic pipe are: 6, 8, 10 and 12-in., \$50.10 a ton, delivered common Boston freight rate points; larger pipe, \$48.10 to \$49.10. A \$5 differential is asked on Class A and gas pipe.

Old Material.—While the movement of old material out of New England and to steel mills in New England is at a minimum, there is a better feeling in the scrap market. Slightly heavier buying by dealers of No. 1 railroad and No. 1 yard wrought, as well as long bundled skeleton and specification pipe, has advanced prices on those grades about 50c. a ton. A scarcity of material also has been a factor in strengthening prices. Brokers report that Pennsylvania steel mills are still given to rejections regardless of the care exercised in loading cars. The belief in local trade circles, however, is that the mills will be less discriminating next month, because of increased bookings in finished steel products.

Buying prices per gross ton f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$9.00 to	\$9.50
Scrap rails	8.00 to	8.50
No. 1 railroad wrought.....	10.50 to	11.00
No. 1 yard wrought.....	8.50 to	9.00
Machine shop turnings	5.50 to	5.75
Cast iron borings (steel works and rolling mill).....	5.50 to	6.00
Bundled skeleton, long.....	6.00 to	6.50
Forged flashings	6.00 to	6.50
Blast furnace borings and turnings	5.50 to	6.00
Forged scrap	5.00 to	5.50
Shafting	13.00 to	13.50
Street car axles	14.00 to	14.50
Wrought pipe (1 in. in diameter, over 2 ft. long).....	7.50 to	8.00
Rails for rerolling	10.00 to	10.50
Cast iron borings, chemical.....	10.50 to	11.00

Prices per gross ton delivered consumers' yards:

Textile cast	\$15.00 to	\$15.50
No. 1 machinery cast.....	14.50 to	15.00
No. 2 machinery cast.....	12.50 to	13.00
Stove plate	12.00 to	12.50
Railroad malleable	14.50 to	15.00

St. Louis

Galvanized Sheets and Tin Plate More Active—Scrap Stronger

ST. LOUIS, July 26.—Since the price of Southern pig iron was reduced to \$17.25, Birmingham, two weeks ago, a Southern producer has sold 3500 tons to St. Louis district foundries, virtually all of which was for third quarter shipment by barge and rail. Of the sales, the largest lot was 600 tons. Sales of the St. Louis Gas & Coke Corporation for the week totaled about 2500 tons, ranging from a carload to 400 tons. Most melters are reluctant to contract for their requirements for the remainder of the year, preferring to buy in close step with their needs. As an illustration, in the last three weeks seven individual orders for 100 tons each, calling for prompt shipment, have been received by one maker. Prices are unchanged.

Prices per gross ton at St. Louis:

No. 2 fdy. sil. 1.75 to 2.25, f.o.b. Granite City, Ill.....	\$20.00 to \$20.50
Northern No. 2 fdy., delivered St. Louis	22.16
Southern No. 2 fdy., delivered...	21.67
Northern malleable, delivered...	22.16
Northern basic, delivered.....	22.16

Freight rates: 81c. from Granite City to St. Louis; \$2.16 from Chicago; \$4.42 from Birmingham.

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes.....	3.25c.
Bars, soft steel or iron.....	3.15c.
Cold-finished rounds, shafting and screw stock	3.75c.
Black sheets (No. 24)	4.80c.
Galvanized sheets (No. 24).....	5.35c.
Blue annealed sheets (No. 10).....	3.60c.
Black corrugated sheets	4.65c.
Galvanized corrugated sheets.....	5.30c.
Structural rivets	3.60c.
Boiler rivets	3.80c.
	Per Cent Off List
Tank rivets, $\frac{7}{8}$ -in. and smaller.....	70
Machine bolts	60
Carriage bolts	60
Lag screws	60
Hot-pressed nuts, square, blank or tapped...	60
Hot-pressed nuts, hexagons, blank or tapped	60

Coke.—There is no change in the coke situation, the usual midsummer dullness prevailing in both domestic and industrial grades. Foundry coke prices are unchanged at \$9.75, St. Louis.

Finished Iron and Steel.—Business in galvanized sheets is especially good and tin plate orders are increasing, while the demand for tank plates is slow, it is reported by the local mill. Generally there is an increase of specifications against third quarter contracts for plates, shapes and bars, but little new business is developing. Railroads have issued inquiries for small tonnages for immediate shipment, but they have made no inquiries for second half requirements. Warehouse business is quiet.

Old Material.—This is a dealers' market. Because of a desire to cover now on existing contracts and also because some dealers see a chance to speculate on what they believe will be a rising market, prices are stronger and on some items there have been advances. Miscellaneous standard-section rails and railroad springs are up 25c. a ton, and railroad malleable is 50c. higher. Consumers in the district are seemingly without interest in the market and are buying very little. The relaying rail market is dull. Railroad lists include: Chicago, Burlington & Quincy, 4180 tons; Union Pacific, 1900 tons; Chicago & Alton, 950 tons; Louisville & Nashville, 325 tons (relaying rails); Nickel Plate, 11 carloads; New Orleans Great Northern, 100 tons.

Prices per gross ton f.o.b. dealers' yards and delivered St. Louis district consumers' works:

Heavy melting steel.....	\$11.00 to	\$11.50
No. 1 locomotive tires	14.50 to	15.00
Heavy shoveling steel.....	11.00 to	11.50
Miscellaneous standard-section rails, including frogs, switches and guards, cut apart.....	13.25 to	13.75
Railroad springs	14.00 to	14.50
Bundled sheets	8.50 to	9.00
No. 2 railroad wrought	11.00 to	11.50
No. 1 busheling	9.75 to	10.25
Cast iron borings	9.00 to	9.50
Iron rails	14.00 to	14.50
Rails for rolling	13.75 to	14.25
Machine shop turnings	6.75 to	7.25
Steel car axles.....	18.50 to	19.00
Iron car axles	23.00 to	23.50
Wrought iron bars and transoms	18.50 to	19.00
No. 1 railroad wrought.....	12.00 to	12.50
Steel rails, less than 3 ft.....	15.50 to	16.00
Steel angle bars	11.75 to	12.25
Cast iron carwheels	13.50 to	14.00
No. 1 machinery cast	16.00 to	16.50
Railroad malleable	12.50 to	13.00
No. 1 railroad cast	15.00 to	15.50
Agricultural malleable	11.50 to	12.00
Relaying rails, 60 lb. and under...	20.50 to	23.50
Relaying rails, 70 lb. and over...	26.50 to	29.00

Detroit Scrap Market Firm

DETROIT, July 26.—The market in old material has all the earmarks of being on a firm basis. One or two of the Ohio mills have purchased during the past week, with the result that the general opinion among the dealers is that the market will advance in the near future at least. With the new models of the automobile manufacturers being released, the foundry melt for August in this district promises to be higher than for the present month. Prices are unchanged.

Dealers' buying prices per gross ton f.o.b. cars, Detroit:

Heavy melting and shoveling steel	\$12.00 to	\$13.00
Borings and short turnings.....	8.50 to	9.00
Long turnings	7.75 to	8.25
No. 1 machinery cast.....	17.00 to	18.00
Automobile cast	18.50 to	19.50
Hydraulic compressed sheets.....	11.25 to	11.75
Stove plate	12.50 to	14.50
No. 1 busheling	10.50 to	11.00
Sheet clippings	7.75 to	8.25
Flashings	10.50 to	11.00

Montreal is to spend \$12,000,000 on harbor improvements. The new work will be started without delay, according to the Montreal Harbor Commission. The detailed expenditures authorized include: wharves, piers and basins \$5,400,000, plant and equipment \$155,000, shops and buildings \$322,000, rails and electrification \$1,342,000, permanent sheds \$300,000, and grain elevators \$3,155,000.

Buffalo

Pig Iron Prices Weaken as Buying Increases—Scrap Soft

BUFFALO, July 26.—Considerable buying has taken place in the pig iron market in the past week, and \$17.50, base Buffalo, has disappeared as a going price. Most recent business was placed at \$17, with some of it going at even less than that figure. The International Harvester Co. has placed 2500 tons of foundry and malleable, of which 2000 tons was for the Buffalo district and the remainder for Canada. A Syracuse melter has bought 1000 tons of malleable. The Remington Typewriter Co. has bought 500 tons of foundry, and the American Brake Shoe & Foundry Co. has purchased a tonnage. The American Car & Foundry Co. has closed for 3000 tons of foundry for its Eastern plants. The General Railway Signal Co. was another buyer during the past couple of weeks. Several smaller tonnages have been placed. A radiator company is in the market for 2000 to 3000 tons of malleable.

Prices per gross ton, f.o.b. furnace:

No. 2 plain fdy., sil. 1.75 to 2.25...	\$16.75 to \$17.00
No. 2X foundry, sil. 2.25 to 2.75...	17.25 to 17.50
No. 1X foundry, sil. 2.75 to 3.25...	18.25 to 18.50
Malleable, sil. up to 2.25.....	16.75 to 17.00
Basic	16.75 to 17.00
Lake Superior charcoal	27.28

Old Material.—The market continues weak. There has been no buying, and one mill which has been holding up on shipments continues to do so. This and the fact that considerable scrap is being shipped in from Detroit combine to make the present probably the dullest period of the summer. Most of the scrap coming in by boat from Detroit is bundled sheets. Rejections at one of the mills are increasing.

Prices per gross ton, f.o.b. Buffalo consumers' plants:

Basic Open-Hearth Grades		
No. 1 heavy melting steel.....	\$14.75 to	\$15.00
No. 2 heavy melting steel.....	14.00 to	14.25
Scrap rails	14.50 to	15.00
Hydraulic compressed sheets.....	12.75 to	13.25
Hand-bundled sheets	9.00 to	9.50
Drop forge flashings	11.50 to	12.00
No. 1 bushelling	13.00 to	13.25
Heavy steel axle turnings	12.75 to	13.25
Machine shop turnings	9.00 to	9.50
Acid Open-Hearth Grades		
Railroad knuckles and couplers..	15.75 to	16.25
Railroad coil and leaf springs...	15.00 to	15.75
Rolled steel wheels	15.75 to	16.25
Low phosphorus billet and bloom ends	17.00 to	17.50
Electric Furnace Grades		
Heavy steel axle turnings	12.75 to	13.25
Short shoveling steel turnings...	10.75 to	11.00
Blast Furnace Grades		
Short shoveling steel turnings...	10.75 to	11.00
Short mixed borings and turnings	10.00 to	10.50
Cast iron borings.....	10.75 to	11.00
No. 2 bushelling	10.00 to	10.50
Rolling Mill Grades		
Steel car axles	15.00 to	16.00
No. 1 railroad wrought	13.00 to	13.50
Cupola Grades		
No. 1 machinery cast	14.25 to	14.75
Stove plate	13.00 to	13.50
Locomotive grate bars	11.00 to	11.50
Steel rails, 3 ft. and under.....	16.50 to	17.00
Cast iron carwheels	14.00 to	14.50
Malleable Grades		
Railroad	15.00 to	15.50
Agricultural	15.00 to	15.50
Industrial	15.00 to	15.50

Finished Iron and Steel.—Mill prices on bars, shapes and plates remain unchanged. The larger buyers can get 2.065c., Buffalo, on bars and shapes, while pur-

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes	3.40c.
Soft steel bars	3.30c.
Reinforcing bars	2.75c.
Cold-finished flats, squares and hexagons.	4.45c.
Rounds	3.95c.
Cold rolled strip steel	5.85c.
Black sheets (No. 24).....	4.30c.
Galvanized sheets (No. 24).....	5.15c.
Blue annealed sheets (No. 10).....	3.80c.
Common wire nails, base per keg.....	\$3.65
Black wire, base per 100 lb.....	3.90

chasers of smaller lots are paying 2.115c. to 2.165c. Sheet business is fair, with prices unchanged. Inquiry for reinforcing bars is coming out in fair volume. The Terminal Transportation Co. of America will require 1300 tons for a new warehouse and pier, and there are some other sizable lots to be placed. Wire business is good.

Decline in Canadian Iron and Steel Output in June

TORONTO, ONT., July 26.—The production of pig iron in Canada fell off sharply during the month of June to 69,437 gross tons, a decline of 12 per cent. from the 78,987 tons of May, and 2 per cent. less than the 70,854 tons produced in June of last year. By grades the production for June showed gains for both foundry and malleable iron, but these were more than offset by a reduction in the output of basic iron, which fell from 64,085 tons in May to 41,698 tons in June. Foundry iron production advanced to 21,387 tons in June from 14,902 tons in May, and the output of malleable iron amounted to 6354 tons, whereas no malleable iron was made in May.

The production of pig iron in Canada for the first half of this year amounted to 403,713 gross tons, a gain of 9 per cent. over the 370,864 tons produced during the corresponding six months of 1926 and 39 per cent. greater than the 290,892 tons produced during the first half of 1925.

Active blast furnaces in June showed no change from those in May. On June 30 six furnaces, having a daily capacity of 47 per cent. of the total for all furnaces in Canada, were in blast at the following points: Dominion Iron & Steel Corporation (British Empire Steel Corporation), Sydney, N. S., two; Steel Co. of Canada, Ltd., Hamilton, Ont., two; Algoma Steel Corporation, Sault Ste. Marie, Ont., two.

The production of steel ingots and castings fell off sharply in June to 59,940 gross tons, a decline of 39 per cent. from the 96,711 tons reported for May, and 27 per cent. under the 81,277 tons produced in June, 1926. For the six months ended with June 30, the production of steel ingots and castings totaled 487,310 tons, a gain of 13 per cent. over the 431,184 tons produced during the first half of 1926 and 15 per cent. over the 423,697 tons reported for the first six months of 1925. This year's output included 462,393 tons of open-hearth steel ingots and 24,917 tons of direct steel castings.

Ohio Foundry Melt Higher Than a Year Ago

Operations of plants affiliated with the Ohio State Foundrymen's Association averaged 84.1 per cent in June. While that figure is lower than the 86.5 per cent reported for May, it stands higher than the 80 per cent operation in June a year ago. The actual melt of all the foundries reporting for June, 1927, was 15,891 tons out of a total "normal" melt of 18,893 tons.

Stocks received in June declined to 83 per cent from a total of 86 per cent in May, but remained higher than the 73 per cent reported in June, 1926. Stocks received embrace all grades of ferrous and non-ferrous metal, including scrap. Stocks on hand declined to 99 per cent in June from 111 per cent in May. In June, 1926, they stood at 88 per cent.

Operations of non-ferrous foundries in June increased to 78 per cent from 73.8 per cent in May. In June a year ago 68.6 per cent operations were reported.

The total apparent consumption of Babbitt metal in June based on reports received by the Department of Commerce from 31 firms was 4,854,653 lb., as compared with 5,007,070 lb. in May and 5,519,270 lb. in June, 1926.

The Pacific Coast Steel Co., San Francisco, has filed a building permit for an addition to its galvanizing plant, 60 x 120 ft. in size. The company also planned to construct an addition to its rolling mill calling for an 80 x 280 ft. structure.

NON-FERROUS METAL MARKETS

The Week's Prices						
	July 26	July 25	July 23	July 22	July 21	July 20
Lake copper, N. Y.	13.00	13.00	13.00	13.00	13.00	12.87½
Electrolytic copper, N. Y.*	12.75	12.75	12.75	12.75	12.75	12.62½
Straits tin, spot, N. Y.	63.75	63.75	...	63.75	63.87½	63.87½
Lead, New York.....	6.50	6.50	6.50	6.50	6.40	6.30
Lead, St. Louis.....	6.35	6.35	6.35	6.35	6.20	6.10
Zinc, New York.....	6.70	6.67½	6.67½	6.67½	6.67½	6.57½
Zinc, St. Louis.....	6.35	6.32½	6.32½	6.32½	6.32½	6.22½

Cents per Pound
for
Early Delivery

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, July 26.—Decided strength has ruled in all of the non-ferrous metals except tin during the past week. In tin the demand for prompt delivery has almost ceased, but there has been good buying of other metals and sharp rises in prices.

Copper.—Active buying of copper both for domestic and foreign shipment has given renewed strength to the market, and there have been rises in prices both for export and home consumption. The principal copper refiners have taken an amount of business which gives them a backlog for the next few weeks, and some of the copper sold within the week has been for September as well as August delivery. The American Brass Co. and other large users came into the market, and there have been a number of sales ranging from 1,000,000 to 3,000,000 lb., the latter being the amount the brass company is credited with having purchased. A week ago the market showed a degree of firmness, with quotations of 12.75c., delivered Connecticut Valley. On Wednesday of last week there was a slight advance, and on Thursday, Friday and Saturday and this week so far the market has been strong at 13c., delivered, some of the largest purchases having been made at this figure despite efforts by buyers to better it. Coincident with advances for domestic sales, the Copper Export Association advanced the export price, first to 13.15c. delivered European ports, on Thursday, and to 13.25c. on Saturday, taking effect Monday. The strength in the market followed the publication of June statistics,

generally considered favorable from the producers' viewpoint, as they showed reduced output; so it may be assumed that such publication had a good deal of influence on the attitude of consumers. Export sales had been large up to the time the advances went into effect, but have since been checked. The consumption of copper by Germany during the first five months of the year was very large compared with the corresponding period last year. The figures reported are 86,902 tons this year against 48,150 tons last year.

Tin.—Good business in tin was done last week, the total probably amounting to 1000 tons, of which more than 600 tons was sold on Wednesday, but since then the market has been quieter and the demand for spot shipment seem almost to have ceased. A result of this is that quotations for delivery as far ahead as September are the same as for prompt, whereas recently a premium for prompt has been usual. For present needs, and for as far as can be seen into the future, there is a surplus of tin. Some lots which are due to arrive soon are unsold and probably will be put in warehouse. This is a new development, as most of the tin which has recently arrived here has been sold before being unloaded. Prices at London today were as follows: Spot standard, £289; future standard, £283; spot Straits, £295 10s. The Singapore price was £290 12s. 6d. The market here today closed at 63.75c. per lb., which is the same as was quoted a week ago. There was a slight rise on Wednesday and Thursday of last week, but it was not held.

Lead.—Three advances in the price of lead have been made by the American Smelting & Refining Co. since our last report dated July 19. On July 20 there was an advance from 6.20c. per lb., New York, to 6.30c. On July 21 there was another advance to 6.40c., and

Metals from New York Warehouse

Delivered Prices Per Lb.

Tin, Straits pig.....	66.00c. to 67.00c.
Tin, bar	68.00c. to 69.00c.
Copper, Lake	14.37½c.
Copper, electrolytic	14.12½c.
Copper, casting	13.62½c.
Zinc slab	7.25c. to 8.25c.
Lead, American pig.....	7.55c. to 8.55c.
Lead, bar	9.55c. to 10.55c.
Antimony, Asiatic	14.00c. to 15.00c.
Aluminum No. 1 ingot for remelting (guaranteed over 99 per cent pure).....	27.00c. to 28.00c.
Aluminum ingots, No. 12 alloy.....	26.00c. to 27.00c.
Babbitt metal, commercial grade.....	30.00c. to 40.00c.
Solder, ½ and ¼	42.00c. to 43.00c.

Metals from Cleveland Warehouse

Delivered Prices Per Lb.

Tin, Straits pig.....	68.75c.
Tin, bar	71.75c.
Copper, Lake	14.00c.
Copper, electrolytic	14.00c.
Copper, casting	13.25c.
Zinc slab	7.75c.
Lead, American pig.....	7.25c.
Antimony, Asiatic	18.00c.
Lead, bar	9.00c.
Babbitt metal, medium grade.....	21.50c.
Babbitt metal, high grade.....	74.75c.
Solder, ½ and ¼	39.50c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base Per Lb.

Sheets—	
High brass	17.75c. to 18.50c.
Copper, hot rolled.....	21.50c. to 22.50c.
Copper, cold rolled, 14 oz. and heavier,	23.75c. to 24.75c.

Seamless Tubes—	
Brass	22.62½c. to 23.62½c.
Copper	23.50c. to 24.50c.
Brazed Brass Tubes.....	25.75c. to 26.75c.
Brass Rods	15.50c. to 16.50c.

From New York Warehouse

Delivered Prices, Base Per Lb.

Zinc sheets (No. 9) casks.....	10.50c. to 11.00c.
Zinc sheets, open.....	11.00c. to 11.25c.

Non-Ferrous Rolled Products

Mill prices on bronze, brass and copper products were advanced ¼c. on July 25. Lead full sheets were raised similarly on July 22 and are now being quoted at 10c. to 10.25c. Zinc sheets are holding to the reduction of May 25.

List Prices, Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight up to
75c. per 100 Lb. Allowed on Shipments
of 500 Lb. or Over

Sheets—	
High brass	17.75c.
Copper, hot rolled.....	21.50c.
Zinc	9.75c.
Lead (full sheets).....	10.00c. to 10.25c.
Seamless Tubes—	
High brass	22.62½c.
Copper	23.50c.
Rods—	
High brass	15.50c.
Naval brass	18.25c.
Wire—	
Copper	15.00c.
High brass	18.25c.
Copper in Rolls.....	20.50c.
Brazed Brass Tubing.....	25.75c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets 0 to 10 gage, 3 to 30 in. wide.....	35.50c.
Tubes, base	45.00c.
Machine rods	34.00c.

Rolled Metals, f.o.b. Chicago Warehouse (Prices Cover Trucking to Customers' Doors in City Limits)

Base per Lb.	
Sheets—	
High brass	18.75c.
Copper, hot rolled.....	21.50c.
Copper, cold rolled, 14 oz. and heavier.....	23.75c.
Zinc	11.00c.
Lead, wide	9.75c.
Seamless Tubes—	
Brass	24.12½c.
Copper	25.00c.
Brazed Brass Tubes.....	28.00c.
Brass Rods	15.50c.

the third followed on July 22, to 6.50c. Some sales are still being made by the leading producer at this figure, but in the outside market there have been transactions at 6.60c. and 6.70c., New York. Reasons for the striking change in the market are not hard to find. First of all, lead at 6.20c., New York, was at the lowest point since 1924, and buyers evidently with almost one mind came to the conclusion that no further reduction was to be expected, and, that on the contrary, an upward turn was likely, especially in view of the recent rise in the prices of zinc ore. In sympathy with this market the London market also went higher, and buyers both here and abroad have been scrambling to cover not only their immediate requirements, but also have bought a little further ahead than has recently been the case. Some sales have been made into September.

Zinc.—The advancing tendency of zinc prices has been steady during the week. Today sales were made at 6.32½c. to 6.35c., St. Louis, with indications that supplies at the lower figure were disappearing. The asking price of some producers is 6.35c., St. Louis. Rising prices for ore have had an effect in bringing about the advance. The opinion is held by some in the trade that zinc has turned the corner, but business is not so active this week as last and the present week may tell whether the advance is on a firm foundation.

Antimony.—Influenced partly by the advance in lead prices, the antimony price has turned upward during the week. Quotations today were 12.50c. per lb., New York, duty paid, which is 1c. higher than a week ago.

Nickel.—Prices are unchanged at 35c. per lb. for ingot nickel and 36c. per lb. for shot nickel. Electrolytic is quoted at 39c.

Aluminum.—The Aluminum Co. of America continues to quote virgin metal, 99 per cent pure, at 26c. per lb. On metallurgical aluminum, 94 to 99 per cent, the usual quotation is 25c.

Non-Ferrous Metals at Chicago

JULY 26.—This market is more active, and prices of copper, lead and zinc are advanced. Old metal prices are moving up in sympathy with new metal quotations, but sales are small in the aggregate.

Prices, per lb., in carload lots: Lake copper, 13c.; tin, 66c.; lead, 6.50c.; zinc, 6.40c.; in less-than-carload lots, antimony, 13.50c. On old metals we quote copper wire, crucible shapes and copper clips, 10c.; copper bottoms, 9c.; red brass, 9c.; yellow brass, 6.75c.; lead pipe, 5c.; zinc, 3.50c.; pewter, No. 1, 34c.; tin foil, 43.50c. block tin, 52c.; aluminum, 13.25c.; all being dealers' prices for less-than-carload lots.

Technologic Paper No. 336 of the Bureau of Standards deals with comparative tests of 6-in. cast iron pipe of American and French manufacture. These are the tests described in THE IRON AGE of Jan. 13 last, page 140, and Jan. 20, page 214. They showed the comparative qualities of pipe from a French foundry and from seven American foundries, there having been six samples taken from each foundry whose pipe was tested. The pamphlet is well illustrated and comprises 24 pages.

The Federal Specifications Board has issued revised master specifications regarding wood screws and padlocks and new specifications for hand drills with hollow handles, the technical requirements becoming effective Aug. 11.

Old Metals, Per Lb., New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible.....	11.00c.	12.50c.
Copper, heavy and wire....	10.75c.	11.75c.
Copper, light and bottoms...	9.25c.	10.50c.
Brass, heavy	7.00c.	8.50c.
Brass, light	5.50c.	7.00c.
Heavy machine composition.	8.75c.	10.125c.
No. 1 yellow brass turnings.	7.50c.	8.25c.
No. 1 red brass or composition turnings	8.00c.	9.00c.
Lead, heavy	5.25c.	5.75c.
Lead, tea	4.25c.	4.50c.
Zinc	4.00c.	4.25c.
Sheet aluminum	13.50c.	15.50c.
Cast aluminum	13.50c.	15.50c.

FABRICATED STRUCTURAL STEEL

Week's Awards Total 31,000 Tons and New Projects Reported Are Over 23,000 Tons

Activity in structural steel continues at a high rate for midsummer. The week's awards reported to THE IRON AGE totalled close to 31,000 tons, of which the largest was 6000 tons for a bank and office building in New York. A bridge at Panama City, Fla., takes 3700 tons and a power plant at Philo, Ohio, 2600 tons. Among new projects totaling 23,000 tons are 2500 tons for an apartment building in New York, 4000 tons for an office building in Houston, Tex., 3000 tons for a building in Minneapolis, Minn., 2000 tons for a building in Philadelphia and 2000 tons for a hotel in San Francisco. Awards follow:

NEW YORK, 900 tons, apartment building on Seventy-third Street, to Paterson Bridge Co.

NEW YORK, 900 tons, loft building for Jay-Thorp, Inc., on Fifty-sixth Street, to Hedden Iron Construction Co.

NEW YORK, 6000 tons, Bank of New York & Trust Co. building at Wall and William Streets, to Hay Foundry & Iron Works.

NEW YORK, 1700 tons, telephone building on Fifty-sixth Street, to Hay Foundry & Iron Works.

NEW YORK, 1400 tons, hotel at Broadway and Seventy-fifth Street, to Levering & Garrigues Co.

NEW YORK, 450 tons, loft building, 653 Eleventh Avenue, to John A. Hendricks Co.

BROOKLYN, 600 tons, apartment building, President Street and Eighth Avenue, to Bethlehem Fabricators, Inc.

BROOKLYN, 385 tons, building for Borden's Farm Products Co., Inc., Avenue G and Forty-ninth Street, to National Bridge Works.

BROOKLYN, 280 tons, hotel, 280 Bridge Street, to Buckingham Steel Co.

RICHMOND HILL, N. Y., 2300 tons, high school, to Lehigh Structural Steel Co.; previously reported to an unnamed fabricator.

HOLLIS, N. Y., 300 tons, Public School No. 109, to Bethlehem Fabricators, Inc.

FLUSHING, N. Y., 800 tons, Nurses' home for Flushing Hospital, to Hedden Iron Construction Co.

CHESAPEAKE & OHIO RAILROAD, 1200 tons, bridges, to Fort Pitt Bridge Works.

TOMS RIVER, N. J., 200 tons, State highway bridge, to Shoemaker Bridge Co.

BELLOWS FALLS, VT., 480 tons, bridge, to Boston Bridge Works, Inc.

SOMERVILLE, MASS., 223 tons, plant, Agar Mfg. Co., to Lehigh Structural Steel Co.

POQUETANOCK COVE, CONN., 330 tons, State bridge, to an unnamed fabricator.

PANAMA CITY, FLA., 3700 tons, bridges across East and West Streets, Andrews Bay, to Nashville Bridge Co.

SAGINAW, MICH., 395 tons, pumping and purification plant, to Massillon Bridge & Structural Co.

ROYAL OAK, MICH., 170 tons, Royal Oak Theater, to Massillon Bridge & Structural Co.

BRIDGEVILLE, MICH., 110 tons, bridge for Michigan State Highway Department, to American Bridge Co.

DETROIT, 1200 tons, two 1,500,000 gal. live steam tanks for the city, to Pittsburgh-Des Moines Steel Co.

PHILO, OHIO, 2600 tons, power house, to Jones & Laughlin Steel Corporation.

AKRON, OHIO, 500 tons, building for General Tire & Rubber Co., to American Bridge Co.

CHARLESTON, W. VA., 1900 tons, 12 steel barges for the Kelly Axe & Tool Co., to Jones & Laughlin Steel Corporation.

CHICAGO, 100 tons, addition to garage, to Wendnagel & Co., local.

CHICAGO, ROCK ISLAND & PACIFIC, 300 tons, bridge, to American Bridge Co.

CHICAGO, MILWAUKEE & ST. PAUL, 410 tons, bridge and subway work, to American Bridge Co.

ST. LOUIS-SAN FRANCISCO RAILWAY, 500 tons, bridge, to Virginia Bridge & Iron Co.

SPRINGFIELD, MO., 120 tons, truck shop for St. Louis-San Francisco Railway, to Mississippi Valley Structural Steel Co.

FRESNO, CAL., 475 tons, theater on Fulton Street, to Minneapolis Steel & Machinery Co.

CALEXICO, CAL., 300 tons, telephone building, to an unnamed fabricator.

LOS ANGELES, 2000 tons, crossing towers for Southern California Edison Co., to Baker Iron Works, local.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

NEW YORK, 2500 tons, apartment building for Fred F. French Co. in Tudor City section, East Forty-second Street.

NEW YORK, 750 tons, building for Federation of Jewish Philanthropies.

NEW YORK, 800 tons, apartment building, 44-50 East Seventy-second Street.

NEW YORK, 950 tons, apartment building, 408 East Fifty-seventh Street.

NEW YORK, 750 tons, office building, 67-71 West Forty-seventh Street.

NEW YORK, 225 tons, bank building, 416-418 West Forty-second Street.

BROOKLYN, 650 tons, apartment building, 24 Monroe Place.

LONG BEACH, N. Y., 175 tons, telephone building.

JERSEY CITY, 125 tons, bank building, Sipp Avenue.

STATE OF NEW YORK, 250 tons, highway bridge.

ALBANY, N. Y., 250 tons, Teachers' College.

PHILADELPHIA, 2000 tons, building for Filbert Wholesale Drug Co. at Twelfth and Filbert Streets.

PHILADELPHIA, 225 tons, building for Scottish Rite Masons.

STATE OF NEW JERSEY, 550 tons, highway bridge.

SOUTHERN RAILWAY, 210 tons, bridge in Georgia.

LEHIGH VALLEY RAILROAD, 250 tons, bridges.

BOSTON, 400 tons, bids closed July 27.

WALTHAM, MASS., 125 tons, theater.

CHELSEA, MASS., 100 tons, theater.

NEW HAVEN, CONN., 450 tons, gymnasium for Yale University.

CLEVELAND, 150 tons, Cleveland Punch & Shear Works Co., plant addition.

NEW YORK, CHICAGO & ST. LOUIS RAILROAD, 175 tons, two bridges in Indiana.

HOUSTON, TEX., 4000 tons, office building.

MINNEAPOLIS, MINN., 3000 tons, Foshay Towers Building.

PITTSBURG, CAL., 250 tons, mill building for the Columbia Steel Corporation.

OAKLAND, CAL., 500 tons, St. Mary's College.

LOS ANGELES, 600 tons, Jewish Synagogue on Wilshire Boulevard.

SAN FRANCISCO, 2000 tons, hotel building.

SAN FRANCISCO, 900 tons, apartment building, Union and Leavenworth Streets.

The mineral production in foreign countries, 1920 to 1924 is summarized in a pamphlet issued by the United States Bureau of Mines under the authorship of L. M. Jones. It gives in tabular form, together with some discussion, the production of the principal minerals for nearly all the countries of the world.

REINFORCING STEEL

Small Awards Total 3500 Tons for the Week— Pending Projects, 3900 Tons

A warehouse and pier at Buffalo requiring 1300 tons is the largest inquiry for concrete reinforcing steel reported in the week. A bridge at Los Angeles, up for bids, will take 1000 tons. The total of new work in the market is about 3900 tons, while the week's awards amounted to 3500 tons, mostly small jobs. Awards follow:

CLEVELAND, 275 tons, building for Northern Ohio Food Terminals Inc., to Bourne-Fuller Co.

CHICAGO, 100 tons, International Harvester Co., to Rochester Bridge Co., Rochester, Ind.

CHICAGO, 250 tons, building for Chicago Coated Board Co. to Midland Structural Steel Co., Chicago.

CHICAGO, 100 tons of rail steel, apartment building at 5737 Kenmore Avenue, to Olney J. Dean & Co.

CHICAGO, 165 tons, public school, to Concrete Engineering Co.

CHICAGO, 700 tons, Chicago Club, to McClintic-Marshall Co.

CHICAGO, 550 tons of rail steel, Lake Shore Tower Apartments, to Calumet Steel Co.

MURPHYSBORO, ILL., 220 tons, Court House, to Duffin Co., Chicago.

DES PLAINES, ILL., 110 tons of rail steel, flume works, to Calumet Steel Co.

STOCKTON, CAL., 300 tons, Medico-Dental Building, to Steel Service Corporation, San Francisco.

SACRAMENTO, CAL., 300 tons, office building at Eleventh and I Streets, to Steel Service Corporation.

OAKLAND, CAL., 100 tons, theater on Telegraph Avenue, to an unnamed San Francisco jobber.

CORVALLIS, ORE., 250 tons, alumni hall for Oregon Agricultural College, to an unnamed company.

SEATTLE, WASH., 122 tons, Fairmont Avenue bridge, to an unnamed local firm.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

BROOKLYN, 700 tons, Mergenthaler Linotype Co. building; Industrial Engineering Co., general contractor.

LONG ISLAND CITY, 1000 tons, Bloomingdale warehouse, Turner Construction Co., general contractor.

BUFFALO, 1300 tons, warehouse and pier, Terminal Transportation Co. of America; bids out.

BUFFALO, 125 tons, Loblaw Groceries, addition to warehouse; being figured.

BUFFALO, 400 to 500 tons, extension to Seajacunda Creek drain, city of Buffalo; bids asked.

CINCINNATI, 125 tons, Christian R. Holmes Memorial Hospital at University of Cincinnati.

WAUKEGAN, ILL., 117 tons, hotel; E. W. Sproul, architect.

CHICAGO, 300 tons, State Line Generating Co., power plant; F. J. Herlihy, general contractor.

LOS ANGELES, 1000 tons, bridge over the Los Angeles River at First Street; bids Aug. 22 by Board of Public Works.

PORTLAND, ORE., 518 tons, Broadway Bridge and Lovejoy viaduct; Parker & Banfield, Portland, low bidders at \$312,630.

RAILROAD EQUIPMENT

The Pennsylvania Coal Co. has ordered 100 mine cars from the Pressed Steel Car Co.

The Fruit Growers Express has bought 300 steel underframes from the Ryan Car Co.

The Consolidation Coal Co. is expected to buy 1100 mine cars.

The Michigan Central has ordered a plow car in addition to one ordered a week or two ago. It will be built by the American Car & Foundry Co.

The Delaware & Hudson is in the market for a 4-cylinder type 2-8-0 locomotive.

The Great Northern is inquiring for a gas-electric car.

More than 60 per cent of Australian imports of candy machinery is American-made, according to a report from Trade Commissioner E. C. Squire, Sydney, to the Department of Commerce.

PERSONAL

Thomas W. Evans, lately open-hearth superintendent for the Pittsburgh Crucible Steel Co., Midland, Pa., has become connected with the sales and service division of the Vulcan Mold & Iron Co., Latrobe, Pa. He gained his steel plant experience at the Homestead works of the Carnegie Steel Co. and has served as open-hearth superintendent at the Toronto plant of the Follansbee Brothers Co., Pittsburgh; as general superintendent of the steel works for the American Tube & Stamping Co., Bridgeport, Conn., and as open-hearth superintendent for the United Alloy Steel Corporation, at Canton, Ohio.

E. G. Dewald, 206 South West Temple Street, Salt Lake City, Utah, has been appointed representative in that district for the Dayton-Dowd Co., Quincy, Ill., manufacturer of centrifugal pumps.

Walter A. Fairchild has been named district sales manager in Connecticut for the Fitzsimons Co., Youngstown, and will have headquarters at 924 Elm Street, New Haven.

Thomas H. Winston has been appointed representative in the Southern territory for the Skinner Chuck Co., New Britain, Conn., and will maintain headquarters at 1133 Real Estate Trust Building, Philadelphia.

W. G. Nichol, recently associated with Manning, Maxwell & Moore, Inc., New York, as its Connecticut representative, has been appointed direct factory representative in Connecticut and western Massachusetts for the Barnes Drill Co., Rockford, Ill. His headquarters at present will be at Stamford, Conn. Prior to his connection with the Manning, Maxwell & Moore organization, Mr. Nichol was identified with the E. W. Bliss Co., Brooklyn.

Wallace J. Hornell has been added to the staff of the Arthur Jackson Machine Tool Co., 32-34 Front Street West, Toronto, and will specialize in portable electrical equipment and tool room supplies. He served his apprenticeship in the machine shops of the Canadian National Railways and was later employed in the tool making departments of C. H. Taylor & Co. and A. Schrader & Sons, both of Toronto.

E. A. Hurme, formerly connected with the Westinghouse Electric & Mfg. Co., East Pittsburgh, has been placed in charge of the Pittsburgh office of the Clark Controller Co., Cleveland, succeeding A. B. Holcomb.

W. S. Horner, who recently resigned as president of the National Association of Sheet and Tin Plate Manufacturers, has been elected a vice-president of the American Rolling Mill Co., Middletown, Ohio. He has been a director and a member of the company's executive committee for a number of years.

C. D. Parkhill, recently in charge of the enameling plant of the Gibson Refrigerator Co., Greenville, Mich., is now associated with the Ferro Enamel Supply Co., Cleveland.

Albert Kreh, who has been on the New York sales staff of the Chisholm-Moore Mfg. Co., Cleveland, for the past nine years, has been appointed district sales manager of the New York office, 30 Church Street.

A. M. Price, until recently president of the Price Iron & Steel Co., Chicago, dealers in scrap metal, has sold his interest in and resigned from that company and has organized the Price, Watson Co., 609 Railway Exchange Building, Chicago, of which he is president. James E. Watson, Jr., is vice-president of the new company, which will deal in iron and steel scrap.

A. H. Homrighaus, lately in charge of the Missouri district office of the Lincoln Electric Co., Cleveland, has been named manager of the new branch office of the company located at 220 Nicholas Building, Toledo, Ohio.

E. R. Pelton, for 15 years assistant to the late J. A. Currey, manager of the Pacific Northwest branch of the Truscon Steel Co. at Portland, Ore., has been appointed successor to Mr. Currey. His territory includes Oregon, Washington, Montana and part of Idaho.

H. J. Veldwyk, formerly with the Western Farquhar Machinery Co., has joined the organization of the Star Machinery Co., Seattle, and will represent the company in the Portland territory, maintaining business headquarters at 262 East Forty-fifth Street.

H. J. Freyn, president Freyn Engineering Co., Chicago, who returned a short time ago from a five months' business trip to Europe, one-half of the time in Moscow, where he arranged with the Soviet Government to serve as consulting engineer for the Russian iron and steel industry, stopped, on his way back to the United States, in Germany, Luxemburg, Holland and England. For his company's associate, the Gutehoffnungshutte, Oberhausen, Rheinland, the Freyn Engineering Co. will plan the remodeling of the Dudgeon blast furnace plant of the Acieries Reunies de Burbach Eich Dudelange, Luxemburg, and the blast furnace plant, comprising two stacks of American design, for the Mannesmann Tube Works, Huckingen, on the Lower Rhine. Mr. Freyn made arrangements with the United Steel Works of Germany for consulting and designing engineering in connection with a new blast furnace plant at Duisburg.

Judge Elbert H. Gary, chairman United States Steel Corporation, has been kept in his New York home, 856 Fifth Avenue, for the past week, suffering from indigestion. He did not attend the meeting of the Finance Committee of the Steel Corporation on Tuesday, July 26, but is expected to return to his office within the coming week.

P. Eyermann, for a number of years a consulting engineer in the United States, particularly in connection with the introduction of blast furnace gas engines, but in recent years engaged in metallurgical work in Austria, has been made editor of *Continental Metallurgical and Chemical Engineering*, which is published monthly in English by the Dr. Joachim Stern Verlag, Berlin W. 35, Germany.

W. O. McMahon, who in recent years has served as a chemist for large foundries in the South, has been added to the sales organization of the Sloss-Sheffield Steel & Iron Co., Birmingham, and will give service in cupola and foundry problems.

Thomas Moses, general superintendent of the United States Fuel Co., Danville, Ill., has been elected president of the H. C. Frick Coke Co. Thomas Dawson, chief engineer of the Frick company, has been elected a vice-president.

Percival Johnson, president Pulaski Iron Co., Real Estate Trust Building, Philadelphia, will sail Aug. 1 on the Leviathan for a European trip.

R. C. Clymer, general manager of yards for Luria Brothers & Co., Reading, Pa., sailed on the Berengaria last week for a month's vacation in Europe.

S. L. Shober has succeeded S. D. Herron as manager of the Philadelphia sales office of Hickman, Williams & Co., Pittsburgh. Mr. Shober has been assistant in that office for some time.

R. D. DeWolf, superintendent, and H. A. Tedman, factory manager of the Galesburg, Ill., plant of the Winslow Boiler & Engineering Co., Chicago, have resigned and will devote their time to a new automobile

specialty manufacturing company. H. J. G. Rudolf, chief engineer of the Winslow company is in charge of reorganization of the various departments at the Galesburg plant, and L. P. Arms, who is in charge of the new research department, is working on improvements to the company's oil burner.

Will Build Galvanizing Plant at Birmingham

The Birmingham Galvanizing Co., Inc., Birmingham, has been organized to manufacture galvanized material. John F. Kent, for many years connected with the Tennessee Coal, Iron & Railroad Co., and the American Cast Iron Pipe Co., is general manager and will supervise construction of the plant, to be built shortly, and will be in charge of operations. Paul A. Ivy, recently general sales manager of the American Cast Iron Pipe Co., is chairman of the board, and Harry Y. Carson, formerly research engineer of the same company, is president.

Jones & Laughlin First Half Earnings Show Slight Decrease

The Jones & Laughlin Steel Corporation, Pittsburgh, in the quarter ended June 30, reports total earnings of \$4,926,854 and of \$10,012,145 for the first half, after deducting operating expenses, including repairs and maintenance of plants and estimated provision for local, State and Federal taxes. Net income during the second quarter totaled \$3,576,079, and for the half it was \$7,234,803. Net profits were \$7,501,769 for the first six months of 1926. The balance to surplus after dividend payments in the 1927 period amounted to \$3,765,870 as against \$4,361,294 in the first half last year.

Foundry Equipment Sales Decline

June sales of 17 companies affiliated with the Foundry Equipment Manufacturers' Association totaled \$410,634, a loss of 3 per cent as compared with the bookings of the same firms in the preceding month and in June, 1926. Orders on hand for 11 companies on July 1 totaled \$539,356, as against \$705,909 for 14 companies on June 1. Shipments of 15 companies in June totaled \$487,405, a gain of 13 per cent compared with shipments of the same firms in May and a gain of 10 per cent over the total for June, 1926.

Gain in Steel Boiler Orders in June

Orders for steel boilers in June totaling 1511 units exceeded those of May, which numbered 1419, according to reports submitted to the Department of Commerce by 72 manufacturers, who comprise most of the leading producers in the country. June orders, however, were slightly below those of April, which were 1551.

The determination of the magnetic induction of sheet steel is the subject of scientific paper No. 545 of the United States Bureau of Standards. It discusses the application of the Burrows and the Fahy permeameters as methods of tests and gives the results of their use. The effect of uniformity of the specimen, of the width of the specimen and of the number of strips, as well as the hysteresis measurements are given. The authors are Raymond L. Sanford, physicist, and James M. Barry of the staff of the bureau.

Iron ore accounted for 22 per cent of the total freight value carried through the canals at Sault Ste. Marie in 1926, according to a report prepared under direction of Lieut.-Col. E. J. Dent, Corps of Engineers, United States Army. The total was \$230,597,608, represented by 57,649,402 tons priced arbitrarily at \$4 per ton. Pig iron and manufactured iron and steel entered into the total in smaller amounts.

OBITUARY

DR. ARTHUR A. HAMERSCHLAG, for many years president of the Carnegie Institute of Technology, Pittsburgh, and since 1923 president of the Research Corporation, 25 West Forty-third Street, New York, died on July 20 at the Roosevelt Hospital in the latter city, as the result of an operation. He was born in Nebraska in 1867, and received his earlier education in Omaha and New York. From 1888 until 1892 he was engaged in engineering field work for the United States in Cuba and Mexico, and upon his return to this country he became superintendent of St. George's Evening Trade School in New York. In 1903 when Andrew Carnegie sought a president for the institute of technology which bears his name, Dr. Hamerschlag was chosen for the position. Under his direction many important educational reforms were introduced into the school of which he remained the active head until 1922. During the same time he conducted an independent practice as a consulting electrical and mechanical engineer, and was later director of industrial research in the office of Maj. Gen. George W. Goethals. He was a member of the American Association for the Advancement of Science, the Society for the Promotion of Engineering Education, the Engineers' Society of Western Pennsylvania and of many civic and professional bodies.

ARVID P. BLOOM, European agent for the Morgan Construction Co., Worcester, Mass., died on July 17 in Gothenburg, Sweden, aged 44 years. He was located at Worcester for some time, and in recent years had had charge of the erection of rolling mills for the Morgan company in different countries of Europe.

THOMAS E. COOK, superintendent of the galvanizing department, Guernsey works, American Sheet & Tin Plate Co., Cambridge, Ohio, died suddenly on July 19 while at a conference of the company's plant executives at Gary, Ind. He was 63 years of age.

WILLIAM J. CARLIN, president and treasurer Coffin Valve Co., Dorchester, Boston, died July 18, at his summer home in Swampscott, Mass., following a short illness. He was born in Boston 59 years ago, and began his career as an apprentice in the heating and ventilating field, later going into business for himself. In 1907 he joined the Coffin Valve Co. He was prominent in city and State political and financial activities.

MOSES M. LIEBERMAN, a member of the firm of the Joseph L. Lieberman Iron Co., Chicago, dealer in scrap iron, died July 9, after a lingering illness.

OTTO KAHLENBERG, of Kahlenberg Brothers, Two Rivers, Wis., manufacturers of marine engines, died July 16, aged 54 years.

An exhaustive statistical study of coke and by-products in 1924 has just been issued by the Bureau of Mines, as a part of the annual publication, "Mineral Resources of the United States." At this late date the information is largely of historical interest. It also contains a 60-page discussion of the marketing of by-products which has more current value.

A cooperative investigation by the Bureau of Mines and the Refractories Manufacturers' Association was begun in 1923 to determine whether better fire brick could be produced if more attention was given to the firing, and the effect on the general plant economy. Details of tests at seven different plants are contained in a 200-page bulletin (No. 271, price 50c.) issued by the bureau. In general, it was found that substantial improvements in practice followed a study of conditions in the kiln during burning.

NEW TRADE PUBLICATIONS

Parallel Rule Attachment.—C. F. Pease Co., 1813 North Franklin Street, Chicago. Folder of four pages describing a device for keeping a T-square properly lined up. It may be attached to any drawing table.

Feed-Water Heater.—Warren Webster & Co., Camden, N. J. Bulletin 103 of 20 pages, describing with illustrations a feed-water heater made of wrought iron, with seamless, welded joints and welded angle bracing. Both rectangular and cylindrical heaters are furnished in a variety of sizes for a wide range of uses.

Electric Motors.—Master Electric Co., Dayton, Ohio. Six-page circular, describing sleeve-bearing motors, with self-aligning broached bearings. Large overload capacity is claimed. The motors range from fractional to 7½ hp.

Distribution Transformers.—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Leaflet No. 20321, covering transformers for industrial application and designed to operate under severe conditions of vibration and handling. The applications include vaults of office buildings, electric shovels, railroad cars, trucks, cement and flour mills and coal mines.

Application of Powdered Coal.—Kennedy-Van Saun Mfg. & Engineering Corporation, 50 Church Street, New York. Bulletin No. 12 of 36 pages, with illustrations. Methods of applying powdered coal to steam boilers, cement kilns, dryers and in metallurgical and chemical work. Useful tables, charts and reference information are given. Many of the illustrations are from applications of the system.

Hot-Water Tank Regulator.—Powers Regulator Co., 2720 Greenview Avenue, Chicago. Calculating device for determining relation between amount of coil surface in a hot-water tank regulator and the desired capacity of the tank. Several types of regulators are illustrated and described, with drawings, half-tones, price lists, etc.

Motor Drives for Rolling Mills.—General Electric Co., Schenectady, N. Y. G. E. A.—151A of 56 pages gives a list of main roll motors supplied by the company to rolling mills in 1926 and earlier, together with a number of installation illustrations showing varying types of motors and classes of service. The units of 300 hp. and greater number 667. Later lists subdivide the information into classes of electric equipment and still fur-

ther into types of mills driven. Finally a list by companies shows the total General Electric motor-drive equipment of each individual plant.

Burning Pulverized Lignite.—Combustion Engineering Corporation, 200 Madison Avenue, New York. Ten-page reprint from *Manufacturers' Record*, describing a new power plant in Texas, designed to burn pulverized lignite. There are numerous illustrations, while the details of principal items of equipment cover more than four columns.

Transmission Machinery.—Goldens' Foundry & Machine Co., Columbus, Ga. Catalog 218 pages illustrating and describing a wide variety of transmission equipment. Price lists for standard and special pulleys, bearings, hangers, tension carriages, etc., are given in great profusion in connection with the illustrations of the equipment specified. Half-tones showing installations and line cuts with dimensions are used in great numbers.

Oil Heating.—Oil Heating Institute, 350 Madison Avenue, New York. Booklet of 77 pages on domestic oil burning. The first 18 pages are taken up with a general discussion of oil burning in place of coal. Following are brief illustrated descriptions of 24 burners made by members of the institute.

Electric Service in the Steel Plant.—Duquesne Light Co., Pittsburgh. Souvenir booklet from the convention in June, of the Association of Iron and Steel Electrical Engineers. There are 12 pages, well illustrated, showing some of the steel plants in the Pittsburgh district and the power plants of the company furnishing electricity.

Arc Welding in Manufacturing.—Lincoln Electric Co., Cleveland. A 36-page booklet illustrating numerous applications of the "Stable-arc" welder to the construction of machines and machine parts, ranging from small gear guards and pedestals to steam shovel buckets and crane booms.

Molding Machines.—International Molding Machine Co., 2608-2624 West Sixteenth Street, Chicago. Circular No. 927. Loose-leaf catalog containing photographic illustrations and dimensions of most popular types of molding machines made by the company. The outside widths of the flasks that can be handled are also given. Number of pages, 32; size of page, 7¼ x 9¼ in.

Pipe Insulation.—National Asbestos Mfg. Co., Jersey City, N. J. Bulletin on "pyro-bestos", a fire-proof, heat insulating covering, which is also said to be water-proof, recommended for underground piping. Bulletin on "National" laminated asbestos and sponge insulation, for high pressure heating and for power piping inside of a building.

Iron Ores Containing Manganese Studied

Manganiferous iron ores have been studied for some time in a cooperative investigation by the Minnesota School of Mines and the United States Bureau of Mines. Bulletin 12 of the Minnesota School of Mines describes the work to date. Ores containing about 10 per cent manganese and 35 per cent iron have been smelted continuously in an experimental blast furnace, and 150 tons of metal (12 per cent Mn, 4.5 per cent C, 0.25 per cent Si, 0.55 per cent P and 0.01 per cent S) is now available for further work. By selective oxidation in a furnace now being built it is hoped to convert this metal into a low sulphur steel and a high manganese slag, the latter being available for the production of commercial ferromanganese.

Metal Coatings for Specific Uses

Dr. William Blum, of the Bureau of Standards, in a recent address at Pennsylvania State College, offered the following practical suggestions on the choice of protective coatings:

"For protecting iron and steel against atmospheric, aqueous, or marine exposure, preference should certainly be given to zinc or cadmium coatings, unless, as on exposed parts of automobiles, appearance is a most important consideration. Accelerated and service tests show that under most conditions, especially for marine exposure, a given thickness of cadmium exerts better protection than the same thickness of zinc. For protecting exposed steel where appearance is essential, the present choice is between nickel and chromium

plating. Thin coatings of either of these are likely to be porous, and hence to furnish incomplete protection. This can be improved by using coatings up to 0.001 in. thick. Still better protection is obtained with multiple coatings, such as nickel, or copper and nickel, over which chromium is now also being applied. By this latter method the tarnish and abrasion resistance of chromium are obtained without the expense for thick chromium deposits.

"For protecting steel against corrosion at high temperatures, calorizing has proved useful. In such cases the protective film in actual service probably consists more largely of aluminum oxide than of aluminum. Chromium is especially promising for this purpose, whether applied by chromizing or by plating."

Surveys of Wage Conditions

In announcing the publication of a "Handbook of Labor Statistics," covering a large volume of data on this general subject, the United States Bureau of Labor Statistics calls attention to the inadequacy of some of its compilations. Subjects of probably great interest, which are not covered at all, or at best infrequently because of limited appropriations, are mentioned. Wage surveys of the more important industries of the country should be made annually, in the opinion of the bureau. The best it has been able to do, however, is to make an annual survey of union wages, biennial surveys of a few large industries, and occasional surveys at irregular intervals of other industries. Most of these items are not covered in an adequate way by other agencies, although some matter of primary importance is handled through non-governmental sources.

Machinery Markets and News of the Works

BUYING STILL SMALL

Activity Limited as Usual Summer Dullness Sets In

Small Business from Technical Schools and a Few Short Lists Provide Principal Interest

AS the month has advanced business in machine tools has declined, apparently as a result of the usual summer dullness. From most districts the July volume of sales is reported as the smallest of any month since the first of the year. There are, however, a number of inquiries which suggest future purchases and there is some current buying, in most instances confined to single tools.

Some selling for export is reported, a Cincinnati builder booking orders for 10 engine lathes, four for Germany and six for Australia. The automotive in-

dustry is quiet and the railroads are not active in closing outstanding lists. The Chicago, St. Paul, Minneapolis & Omaha has requested revised prices on several items in its inquiry and the Cincinnati Street Railway Co. is expected to begin purchasing late in August or during September, which will total about \$100,000 worth of tools.

Prospective purchases of machine tools for trade and technical schools promise some early business. In Chicago, plans for the Lane technical school are reported nearing completion and Boston is inquiring for milling machines for its Winship school and miscellaneous tools for its Mechanic Arts and Washington schools.

Among the few lists of tools under consideration are 20 polishing machines for a Chicago manufacturer and a list from a South Boston shop, which includes an internal grinder, surface grinder, gear shaper and three or four other tools.

New York

NEW YORK, July 26.

DEMAND for machine tools has lapsed into that state of dullness usually associated with the midsummer vacation period. Few sales are being made and inquiries also are at a low point. Among the week's sales were a 16-in. vertical shaper, which goes to a Worcester, Mass., company; a 3-spindle drill to a Brooklyn company, and a 16 x 60 in. lathe to an oil company in New Jersey.

The Yellow Taxi Corporation, 155 East Forty-fourth Street, New York, has leased property at 623-29 West Fifty-seventh Street, near Eleventh Avenue, as a site for a new multi-story automobile service, repair and garage building, totaling about 65,000 sq. ft., with central maintenance shop. It will cost in excess of \$175,000 with equipment. The structure is scheduled to be ready for occupancy by the close of the year.

The Manhattan Steam Bakery, Inc., 43-51 Purvis Street, Long Island City, is considering rebuilding the portion of its plant destroyed by fire July 7, with loss estimated at \$200,000.

The Stieglitz-Treiber Co., 68 Thirty-third Street, Brooklyn, metals, tinplate and steel specialties, etc., has leased two one-story buildings at Long Island City for a new plant and will move from the present location.

The International Combustion Engineering Corporation, 280 Madison Avenue, New York, manufacturer of power and engineering equipment, is arranging for an increase in preferred stock to total \$10,000,000, and in common stock from 750,000 to 1,100,000 shares, no par value, a portion of the fund to be used for expansion. It is proposed to arrange for the early sale of the new issue of preferred stock in an amount of \$5,000,000, to be used in part for the acquisition of the plant and business of the F. J. Lewis Mfg. Co., 2513 South Robey Avenue, Chicago, manufacturer of roofing materials, etc., which will be consolidated with its organization. The Lewis company has branch plants at Granite City, Ill., Chattanooga, Tenn., and Newark, N. J.

The Mack Motors Co., Washington Avenue, Albany, N. Y., has asked bids on general contract for a new two-story service, repair and garage building to cost close to \$200,000 with equipment. Albert Kahn, Inc., Marquette Building, Detroit, is architect; Fuller & Robinson, 95 State Street, Albany, N. Y., are associated architects.

The Columbia Phonograph Co. Inc., 1819 Broadway, New York, manufacturer of talking machines and parts, has filed plans for a one-story addition to its plant at Bridgeport,

Conn., reported to cost about \$40,000. The company is arranging for the production of electrically-operated phonographs and radio combinations, and has entered into agreement with Federal-Brandes, Inc., manufacturer of radio sets, etc., for such equipment.

The Pechter Baking Co., 468 Cherry Street, New York, is considering the rebuilding of the portion of its six-story plant destroyed by fire July 13, with loss reported in excess of \$250,000 including equipment.

The Keiner-Williams Stamping Co., 8746 123rd Street, Richmond Hill, L. I., manufacturer of metal stampings, etc., has awarded a general contract to the Caye Construction Co., 356 Fulton Street, Brooklyn, for a one-story and basement addition to cost about \$75,000.

The Board of Education, Dumont, N. J., is considering the installation of manual training equipment in a proposed two-story high school to cost about \$450,000 with equipment. Hacker & Hacker, 1014 Palisade Avenue, Palisade, N. J., are architects.

The Erie Railroad Co., 50 Church Street, New York, has filed plans for a one-story machine shop, 40 x 60 ft., at Jersey City, N. J. Graham King is company architect.

Strait & Richards, Inc., Selva Street, Irvington, N. J., manufacturer of gas logs, fireplace heaters, etc., has awarded a general contract to the Fatzler Co. Inc., 676 South Sixteenth Street, Newark, for a one-story addition, 104 x 106 ft., to cost close to \$40,000 with equipment.

The Elizabeth Electro Plating Co., 815 Pearl Street, Elizabeth, N. J., is planning for enlargements in its recently established plant, to include an addition and the installation of equipment.

The John A. McCrane Motors Co., 638 Market Street, Paterson, N. J., will take bids early in August for a one-story service, repair and garage building, to cost \$100,000 with equipment. A. E. Sleight, 138 Washington Street, is architect.

The National Lead Battery Co., 1728 Roblyn Avenue, St. Paul, Minn., manufacturer of electric storage batteries, etc., has work under way on a new Eastern factory branch, storage and distributing plant at North Bergen, N. J., to be two stories, 120 x 170 ft., to cost in excess of \$85,000 with equipment. General contract has been let to Bonanno Brothers, 988 Bline Avenue, Union City, N. J.

The Board of Education, Oradel, N. J., is said to be planning the installation of manual training equipment in a proposed three-story junior high school to cost about \$350,000, for which revised plans are being prepared by Coffin & Coffin, 522 Fifth Avenue, New York, architects.

J. K. Larkin & Co., 253 Broadway, New York, distributors of iron and steel products, are now carrying in their warehouses

a complete stock of the wrought iron pipe manufactured by the Cohoes Rolling Mill Co., Cohoes, N. Y.

Olsen & Marggraf, Inc., dealer in metal ceilings, has removed its Brooklyn office and warehouse from 433 Third Avenue to Bush Terminal Building No. 31, First Avenue and Forty-fifth Street.

The Grant Accessories Corporations, 107 Liberty Street, New York, has been organized to make oil burning equipment. The company expects to manufacture under contract and present work is being done by the Porter Machine Co., 115 Plymouth Street, Jersey City.

The Peerless Blade Corporation, 220 West Forty-second Street, New York, has been organized to make safety razor blades and kindred products of Swedish steel. Manufacturing contracts have been let, but the company is interested in hearing from steel manufacturers who might be able to furnish suitable materials for the blades.

New England

Boston, July 25.

INDICATIONS are that July will be the smallest month in point of sales experienced by the machine tool trade in this district for several months. Shipments by machinery manufacturers are also falling off. A South Boston shop is inquiring for an internal grinder, a surface grinder, a gear shaper and three or four other tools. This is the largest active inquiry at the moment, but certain tools are specified, consequently there will be no competition for the business. The city of Boston is inquiring for milling machinery for the Winship school and miscellaneous tools for the Mechanics Arts High and Washington schools. Bids close this week.

The Sleeper & Hartley Co., Worcester, Mass., machinery, is building an addition to its plant.

W. F. Dempsey, Granfield Avenue, Roslindale, Boston, has started a one-story, 30 x 55 ft., addition to his Murray Hill Road plant for automobile repair work. H. R. Duffie, 364 Belgrade Avenue, Roxbury, Boston, is the architect.

The Union Iron Works, Inc., Bangor, Me., snowplows, will remain in that city. The company has been negotiating with a Massachusetts city for a place of manufacture, but its plans have changed.

The Agar Mfg. Co., 15 Winchester Street, Medford, Mass., has started a one-story, 150 x 300 ft., manufacturing plant. C. A. Agar is president. H. M. Ramsay, 184 Boylston Street, Boston, is the architect. Motors and other electrical equipment are required.

The State of Connecticut will erect a training school at Mansfield, Conn., and will require mechanical equipment. John F. Lynch, Town Hall, West Haven, Conn., engineer, is in charge of the project.

The Wire Machinery Corporation of America, Inc., New Haven, Conn., has been formed to succeed the New England Wire Machinery Co. to complete a receivership, and will take over the latter company's business. The new company has an authorized capital of 1200 shares of preferred stock, par \$25, and 3000 shares of common stock without par value.

The Warner Brothers' Co., Bridgeport, Conn., corsets, has discontinued the manufacture of metal goods and is offering for sale its plant unit devoted to that work, as well as machine tools. Wire and sheet metal working machinery, screw machines and general plant equipment are for sale.

A contract involving approximately \$200,000 has been placed with the Westinghouse Electric & Mfg. Co. by Stone & Webster, Inc., Boston, covering electrical apparatus for the new West Springfield substation of the United Electric Light Co. Transformers, four large oil circuit breakers and other equipment are involved.

The Aberthaw Co., Boston, has been awarded the building contract for the first unit of the new branch service and sales building of the White Co. at Dryden Lane and Branch Avenue, Providence. It will be one and two stories of reinforced concrete, brick and steel, approximately 102 x 200 ft. The Aberthaw Co. will also build a four-story reinforced concrete service building for the Belcher & Loomis Co., West Exchange and Mason Streets, Providence.

Following the recent purchase of the plant of the Bath Iron Works, Bath, Me., by the Central Maine Power Co., Augusta, a new company has been organized under the name of the Rex Pulp & Products Co., to take over the property which will be converted for the manufacture of pressed wood-pulp products. It is also planned to build a one-story addition for pulp grinding and pulverizing. Walter S. Wyman, president of the Central Maine Power Co., is interested in the new organization.

The O'Meara Motor Co., West Hartford, Conn., will install a machine repair and service department on the second floor of its proposed new two-story garage and sales building. O. F. Smith, Hartford, is architect.

The Board of Trustees, Massachusetts Institute of Technology, Cambridge, Mass., will soon begin the construction of a new aeronautical engineering building, to cost in excess of \$100,000 with equipment. Coolidge & Carlson, 89 State Street, Boston, are architects.

The Megquier & Jones Co., Portland, Me., manufacturer of iron and brass castings, etc., is developing a new department for the production of all-steel snow plows and has secured orders for more than 150 machines of this kind.

The Brine Transportation Co., 43 India Street, Boston, operating a motor bus line, has had plans drawn for a new one-story service, repair and garage building, 75 x 120 ft., for company cars, reported to cost close to \$75,000 with equipment. E. C. Luce, Jr., 14 Beacon Street, Boston, is architect.

The Atlas Body Works, McKinley Avenue, Bridgeport, Conn., will take bids at once for a one-story addition to its automobile body manufacturing plant, 50 x 75 ft. Harry Koerner, Bridgeport, is architect.

The Reed & Prince Mfg. Co., Worcester, Mass., manufacturer of bolts, nuts, etc., has awarded a general contract to the B. F. Marsh Co., Worcester, for a one-story addition.

The International Harvester Co., 608 South Michigan Avenue, Chicago, has had plans prepared for a new factory branch, storage, service and distributing plant at Providence, R. I., for its motor truck division, to cost \$100,000 with equipment. Local offices are at 163 Broad Street.

The J. Cushing Co., Fitchburg, Mass., is said to be planning the early construction of a new grain elevator at Framingham, Mass., to cost \$110,000 with equipment.

Philadelphia

PHILADELPHIA, July 25.

CONTRACT has been let by the United States Gypsum Co., 205 West Monroe Street, Chicago, to Metzger, Fisher & White, Otis Building, Philadelphia, for a one-story factory branch and distributing plant, 60 x 200 ft., at Philadelphia, to cost about \$40,000.

The Walter P. Miller Co., 452 York Avenue, Philadelphia, manufacturer of paper products, has awarded a general contract to Frederick A. Havens & Co., 845 North Nineteenth Street, for a four-story and basement addition, 80 x 92 ft., to cost about \$90,000 with equipment. Harris & Richards, Drexel Building, are architects.

Paul Brosz, 2511 West Huntingdon Street, Philadelphia, builder and contractor, has plans for a two-story general shop and equipment storage and distributing building, 27 x 90 ft. J. T. Brugger, Public Ledger Building, is architect.

The John A. Roebing Sons' Co., Trenton, N. J., manufacturer of wire rope, cable, etc., will begin work on an addition to its plant on Henry Street, Deutzville, to be one story, L-shaped, 90 x 400 ft., and 60 x 80 ft., to be equipped largely as a planning shop, to cost about \$80,000.

The Welsbach Co., Gloucester, N. J., manufacturer of gas mantles, etc., a subsidiary of the United Gas Improvement Co., Broad and Arch Streets, Philadelphia, will give over a portion of its local plant to the manufacture of electric refrigerating equipment and other electrical apparatus, and proposes to develop as a new branch of business.

The Board of Education, Altoona, Pa., plans the installation of manual training equipment in a new four-story senior high school to cost \$750,000, for which bids are being received on a general contract until Aug. 1. The Frank Irving Cooper Corporation, 172 Tremont Street, Boston, is consulting architect; Hersh & Shollar, Commerce Building, Altoona, are architects.

The Sandusky Cement Co., Engineers' Building, Cleveland, has plans for the immediate erection of an addition to its mill at West York, Pa., for the manufacture of gray cements, to cost more than \$250,000 with machinery. It is expected to require about six months for completion.

The Board of Trustees, State Hospital, Cameron and Maclay Streets, Harrisburg, Pa., plans the installation of an ice and cold storage plant at the institution, in connection with extensions in other buildings. The entire project will cost \$350,000. C. H. Lloyd, Telegraph Building, is architect.

The Penn Central Light & Power Co., Altoona, Pa., is arranging for the purchase of a group of 10 electric light and power utilities. The properties will be consolidated and extensions and improvements made in the different districts, including transmission line construction. The purchasing company is operated by the National Electric Co., 72 West Adams Street, Chicago.

The Yellow Cab Co., 312 Cherry Street, Reading, Pa., has plans for the immediate erection of a new two-story

The Crane Market

THERE is very little new inquiry for either electric overhead or locomotive cranes, but a number which have been in the market for several weeks are still active and some business is expected to close in the next week or two. It is reported that the Atmospheric Nitrogen Corporation, Syracuse, N. Y., a subsidiary of the Semet-Solvay Co., will shortly be active again on purchases including locomotive cranes for the new plant at Hopewell, Va. The list of two 20-ton standard gage and a 10-ton crawl tread locomotive crane from the New York Central Railroad has not yet been awarded.

Among recent purchases are:

Chicago, Rock Island & Pacific Railway Co., Chicago, a

small, gasoline driven, special locomotive crane from the American Hoist & Derrick Co.

Douillet & Williams, Inc., New Orleans, a 15-ton crawl-tread locomotive crane from the American Hoist & Derrick Co.

Robins Dry Dock & Repair Co., Brooklyn, N. Y., a subsidiary of the Todd Shipyards Corporation, one 5-ton electric overhead crane from the Bedford Foundry & Machine Co.

Missouri Pacific Railway Co., a 25-ton electric overhead crane from the Shaw Electric Crane Co.

Griffin Wheel Co., Salt Lake City, Utah, a 5-ton, 36-ft. span, 3-motor, magnet handling crane from the Milwaukee Electric Crane & Mfg. Corporation.

service, repair and garage building, 40 x 200 ft., to cost close to \$75,000 with equipment. F. A. Muhlenberg, Ganster Building, is architect.

The plant, equipment and stock of the Pottsville Bolt Co., Inc., Pottsville, Pa., will be sold at public auction on the premises on Aug. 18. An itemized list of machinery and inventory may be had by applying to the company.

The Automatic Economy Corporation, 2401 Chestnut Street, Philadelphia, has been organized to manufacture oil burners. Contract has been let for the manufacture of the product and the company is not in the market for materials or equipment.

Warren Webster & Co., Camden, N. J., manufacturers of steam heating systems, feed water heaters and steam specialties, have acquired the inventions of James A. Donnelly and the physical assets of the Donnelly Systems Co., New York. Business of the Donnelly company has been liquidated.

Milwaukee

MILWAUKEE, July 25.

WHILE orders for machine tools are not numerous, manufacturers and dealers report business as gradually becoming more satisfactory. Inquiry has improved, the automotive industries contributing the larger share of requests for prices and deliveries. The Gisholt Machine Co., Madison, Wis., is working on a rush order for crankshaft balancing machines from the Ford Motor Co., and several other tool builders in this territory have orders from the same interest. The general outlook is regarded as brighter than for several months past.

The Line Material Co., South Milwaukee, Wis., manufacturer of electric transmission line materials and supplies, has let the general contract to Bentley Brothers, Inc., 808 South Pierce Street, Milwaukee, for the construction of a three-story addition, 60 x 120 ft., to be ready about Oct. 1. W. D. Kyle is president and general manager.

The Appleton Wire Works, 705 North Lawe Street, Appleton, Wis., has engaged Edward A. Wettengel, local architect and engineer, to prepare plans for an addition. Details have not been made public, but work will begin early in August.

The Nekoosa-Edwards Paper Co., Port Edwards, Wis., has plans by the Wisconsin Bridge & Iron Co., Milwaukee, for a one-story brick and steel finishing room, 165 x 200 ft., to cost \$150,000 including machinery.

J. W. Turner, proprietor of Turner's Garage, Elkhorn, Wis., has acquired a site at Delavan, Wis., for a new automotive building, 60 x 120 ft., two stories and part basement to cost \$40,000.

The Trustees of Waunakee, Wis., close bids Aug. 11 for the complete construction of a municipal waterworks and sewage plant. The plans call for pumping equipment, motors, 50,000-gal. steel tank and steel tower. E. B. Parsons is consulting engineer.

The Century Motor Co., 407 Lake Avenue, Racine, Wis., has let the general contract to the Bondgard Construction Co., local, for a new automotive headquarters building, 100 x 125 ft., part two stories and basement. It will cost about \$65,000.

The city of Fond du Lac, Wis., C. J. Fay, city clerk, closes bids Aug. 2 for the complete construction and equipment of a municipal sewage disposal plant designed by Alvord, Burdick & Howson, engineers, Chicago, and estimated to cost \$100,000. George H. Stanchfield is city engineer.

The Lake Shore Transfer Co., South Milwaukee, Wis.,

is closing bids for the construction of a private garage and repair shop for its motor truck moving vans and other equipment. It will be 90 x 120 ft., part two stories and basement, and cost about \$50,000. The architects and engineers are Davis & Tuckwell, 377 National Avenue, Milwaukee.

Drawings and specifications for the new Beloit Vocational School will be ready about July 29 for bidders on general construction, plumbing, electrical and heating and ventilation. Bids will be opened Aug. 22. Merman & Skogstad, La Crosse, Wis., are architects. A. G. McCreary, is director of the school.

Chicago

CHICAGO, July 25.

MACHINE tool sales are spotty and mostly for replacement. New inquiry is in larger volume, but much of it is of a preliminary character and may not turn into actual sales before fall. The automobile trade is inactive, but there is some evidence that agricultural machinery manufacturers will require additional machine tool equipment. The Chicago & North Western has purchased a 34-in. drill and a small local manufacturer has taken several punch presses. The list prepared earlier in the year by the Chicago, St. Paul, Minneapolis & Omaha is still open and revised prices have been requested on several items. Plans for the Lane Technical High School, Chicago, are rapidly taking shape.

The Commonwealth Edison Co., 72 West Adams Street, Chicago, will build a one-story substation at 1145 West Twenty-second Street to cost \$50,000. The R. Sollitt & Son Construction Co., 228 North La Salle Street, is general contractor.

The Chicago Automatic Conveyor Co., has purchased a one-story factory and office building, 150 x 200 ft., at Fifty-fifth Street near Nineteenth Street, Chicago. It is served by a switch track of the Baltimore & Ohio Chicago Terminal Railroad.

The Chicago Coated Board Division of the Robert Gair Co., 420 East North Water Street, Chicago, has awarded a general contract to the H. F. Friestedt Co., 431 North Michigan Avenue, for a two-story addition to its machine department, to cost close to \$100,000 with equipment. Headquarters of the parent company are at 350 Madison Avenue, New York.

The Coliseum Battery Co., 1608 South Wabash Avenue, Chicago, manufacturer of storage batteries, etc., will soon begin the erection of a new three-story and basement plant, 40 x 165 ft., to cost about \$85,000. Sidney C. Finck, 35 South Dearborn Street, is architect.

Ovens, power equipment, conveying and other machinery will be installed in the proposed one-story and basement plant to be constructed by the Campbell Baking Co., Waterloo, Iowa, to cost about \$175,000, for which superstructure will soon begin.

The Carpenter Steel Co., 1101 West Lake Street, Chicago, has awarded a general contract to A. B. Larson, 19 South La Salle Street, for a new one- and two-story factory branch, storage and distributing plant, 87 x 123 ft., at 1516-24 Carroll Avenue, to cost about \$45,000. A. E. Davidson, 53 West Jackson Boulevard, is architect. Headquarters of the company are at Reading, Pa.

The Midwest Steel & Iron Works, Inc., 25 Larimer Street, Denver, Colo., is completing plans for the early construction of an addition to its plant at Pueblo, Colo., to cost more than \$85,000 with equipment. The engineering department of the company is in charge.

The City Council, LeMars, Iowa, is arranging for the immediate erection of a new central steam power plant for municipal heating service, to cost close to \$125,000 including equipment. C. C. Woodke is city clerk.

The Board of Education, Paris, Ill., contemplates the installation of manual training equipment in the proposed two-story Mayo junior high school to cost \$135,000, for which bids will soon be asked on a general contract. Liese & Ludwig, Temple Building, Danville, Ill., are architects.

Penick & Ford, Ltd., Cedar Rapids, Iowa, has plans for a two-story addition to its sugar mill, 100 x 165 ft., to cost close to \$100,000 with equipment. General contract has been let to Lightner Brothers, 94 Second Avenue West. Headquarters are in the Whitney Building, New Orleans.

The Peerless Ice Machine Co., 503 South Jefferson Street, Chicago, manufacturer of ice-making machinery, will break ground at once for a new plant, 125 x 200 ft., to cost \$125,000 with machinery. General contract has been let to the Kreitzer Construction Co., Chicago. Koenigsberg & Weisfeld, 155 North Clark Street, are architects. It is understood that the present plant will be removed to the new location.

The Willard Storage Battery Co., St. Clair Avenue and 131st Street, Cleveland, is said to be planning a new factory branch, storage and distributing plant at Sioux City, Iowa, to cost close to \$75,000 with equipment.

The Dallas Brass & Copper Co., 820 Orleans Street, Chicago, has asked bids on a general contract for a new one-story plant to cost close to \$40,000. William Ehman, 140 South Dearborn Street, is architect.

The Board of Education, 650 South Clark Street, Chicago, is said to be planning the installation of manual training equipment in its proposed four-story Austin Senior High School to cost close to \$3,000,000. J. E. Christensen is architect for the board, address noted.

The Illinois Steel Co. and the American Steel & Wire Co. are constructing a \$500,000 power unit at Joliet, Ill. It will be equipped with five 1000-hp. boilers and will generate power for all units of both plants. The steel company engineers are in charge of construction.

The International Harvester Co., Chicago, which has begun construction of a branch plant at East Moline, Ill., has increased the floor space of the first unit, as originally planned, from 300,000 to 450,000 sq. ft. The building will be 300 x 1500 ft. and 35 ft. high.

Cincinnati

CINCINNATI, July 25.

NO improvement in machine tool sales is noted, and indications are that July will be the poorest month of the year from the standpoint of fresh bookings. New inquiries are scarce and give little hope of an upward turn in orders during the next four to six weeks. None of the major sources of business, such as the automotive industry and the railroads, is actively in the market. A company in the Detroit district has purchased three special lathes, while a local builder has sold four engine lathes for delivery to Germany and six for shipment to Australia. The Cincinnati Street Railway Co. is not expected to buy tools for its new shops until late in August or in September. Its total expenditures probably will be in excess of \$100,000. A Fort Wayne, Ind., company is reported to have closed recently for equipment costing approximately \$65,000. An inquiry for 20 polishing machines from a manufacturer in Chicago territory is now before the trade.

Bids will soon be asked by the Miller Machine & Mold Works, Inc., Ann Street, Columbus, Ohio, for a one-story addition, to cost about \$35,000 with equipment. It will be used largely for foundry service.

The Chillicothe Paper Co., Chillicothe, Ohio, will break ground at once for a two-story addition, 40 x 540 ft., with L-extension, 80 ft. wide, to cost in excess of \$200,000 with equipment.

The Eco-Thermal Stove Co., Lebanon, Ohio, manufacturer of gas ranges, etc., has authorized plans for rebuilding the portion of its works recently destroyed by fire, with loss close to \$150,000 including equipment.

The Volunteer Portland Cement Co., Knoxville, Tenn., will soon begin the construction of its proposed mill near the city, to cost close to \$900,000 with machinery, contracts for which are now being placed. A machine shop will be installed.

Houston Dudley has acquired a controlling interest in the Gray & Dudley Co., Nashville, Tenn., manufacturer of

stoves, stove castings, etc., including general foundry business. The new owner is said to have plans under consideration for expansion.

The Brown-Craven Equipment Co., 706 Manning Street North, Chattanooga, Tenn., machinery dealer, has inquiries out for a power shovel, Diesel-Bucyrus type, capacity, 1½ yd.

Hillsmith & Co. Inc., Union Trust Building, Cincinnati, engineer, has plans under way for a new one and two-story service, repair and garage building for motor buses, to cost about \$100,000 with equipment.

The Kentucky & West Virginia Power Co., Hazard, Ky., is planning for extensions and improvements in its properties near Hickman, Ky., including enlargements in a number of power substations and the installation of additional equipment. The transmission line to Coolidge, Ky., will be rebuilt for increased power supply.

The Taylor Plow Co., Inc., Cleveland, Tenn., has been organized to manufacture tractor plows. Its new building is nearly completed and most of the necessary machinery has been purchased. The company expects to begin operations on Aug. 15.

Buffalo

BUFFALO, July 25.

CONTRACT has been let by the Niagara Machine & Tool Works, 637-83 Northland Avenue, Buffalo, to the Metzger Construction Co., local, for its one-story machine shop addition, to cost approximately \$90,000 with equipment. H. E. Plumer and Associates, 775 Main Street, are architects and engineers.

The Corhart Refractories Co., Corning, N. Y., lately formed with a capital of 1200 shares of stock, no par value, by officials of the Corning Glass Works, and the Hartford-Empire Co., Hartford, Conn., is completing plans for the early erection of a new plant at Louisville, Ky., where a 5-acre tract has been secured. The plant will be given over to the manufacture of high refractory blocks for glass furnaces under a new process. The initial plant is reported to cost upward of \$200,000. Alexander D. Falck, of the Corning Glass Works, is president of the new company; Frederick B. Lincoln is vice-president and general manager, and will be in charge of plant construction.

The Remington-Rand Corporation, North Tonawanda, N. Y., has concluded arrangements for the purchase of the Lineatime Co., Inc., Rochester, N. Y., manufacturer of automatic copy-holders for typewriters. The local plant will be continued as heretofore, with Richard Reiner, general manager, remaining in the same capacity. Extensions are under consideration. The company will be known as the Lineatime Division of the Remington-Rand Corporation.

The Board of Education, Honeoye Falls, N. Y., is said to be planning the installation of manual training equipment in a three-story high school to cost \$200,000, for which bids will soon be asked on a general contract by A. W. & H. B. Dyer, 217 East Avenue, Rochester, N. Y., architects.

The Peters-Morse Mfg. Co., Ithaca, N. Y., manufacturer of adding machines and parts, has discontinued operations owing to financial difficulties, and the plant will be closed. The company has been closely allied with the Morse Chain Co. of the same city.

South Atlantic States

BALTIMORE, July 25.

THE Standard Wholesale Phosphate & Acid Co., Continental Building, Baltimore, has awarded a general contract to the Chemical Construction Co., Charlotte, N. C., for its proposed new two-story plant in the Curtis Bay section for the manufacture of sulphuric acid and allied products, to cost close to \$450,000 with equipment. George S. Whiting is president.

The Virginia Electric & Power Co., Richmond, Va., is arranging an expansion and improvement program for the last half of 1927 to cost about \$6,650,000. The work will include the completion of a new steam-operated electric power plant now in course of construction at Norfolk, Va., new transmission lines, power substations, and other miscellaneous work. J. Frank McLaughlin is executive vice-president. The company is operated by the Engineers' Public Service Co., an interest of Stone & Webster, Inc., 49 Federal Street, Boston, engineer.

The National Asbestos Co., Minneapolis, N. C., recently formed with a capital of \$150,000 by E. C. Guy of E. C. Guy & Co., Newland, N. C., and associates, has acquired property at Minneapolis and plans the early erection of a new plant, to cost upward of \$60,000 with machinery.

J. Norwood Cleveland, Marietta, S. C., is planning the purchase of ice-manufacturing equipment for a capacity of about 20 tons per day.

The Board of Education, Westminster, Md., is said to be considering the installation of manual training equipment in a new three-story high school to cost \$175,000, for which preliminary plans are being drawn by B. E. Starr, 9 North Market Street, Harrisburg, Pa., architect.

The American Aeronautic & Speed Boat Corporation, Roland Court Building, Virginia Beach, Va., recently organized with a capital stock of \$500,000, is asking bids until Aug. 1 for equipment for a proposed plant for the production of airplanes and speed boats, including parts and assembling. The company has taken over property at Bird Neck Point, and has engaged Philip B. Moser, Law Building, Norfolk, Va., architect, to prepare plans for the initial units, to cost in excess of \$85,000 with equipment; the bids for the latter will be received at the architect's office. The company will also establish an airport on a site 150 x 250 ft. A. C. Ross is secretary, in charge of operations.

The Common Council, Holly Hill, S. C., contemplates the installation of pumping machinery and power equipment in connection with proposed extensions and improvements in the municipal waterworks. A bond issue of \$47,000 has been approved for the work.

The Blue Ridge Transportation Co., Frederick, Md., is considering the construction of a one-story garage, with machine repair and service departments for motor buses, to cost about \$65,000.

The Fields Mfg. Co., Mouth of Wilson, Va., is planning the installation of a water power plant on the New River, near Fox Creek, for service at its textile mill. It will have an initial output of 200 hp.

The Republic Paper Products Co., 1402 West Marshall Street, Richmond, Va., has approved plans for the erection of a new plant at Bastrop, La., on site adjoining the mill of the Southern International Paper Co., with main unit, 100 x 400 ft., to cost upward of \$250,000 with machinery. It is scheduled for completion within six months. R. J. Cullen, president of the Southern International Paper Co., is interested in the project and will supervise erection.

The Chapman Storm Corporation, Holly Hill, S. C., is planning the purchase of machine tools and equipment for a local machine shop, including lathe, shearing machine, shaper, etc. The company will also purchase equipment for a planing mill, including belting and transmission apparatus.

Cleveland

CLEVELAND, July 25.

THE machine tool market has improved slightly both in sales and inquiries and July is expected to show up somewhat better than June in the volume of business. Buyers are showing more interest in new equipment than a month ago and the trade regards the outlook more favorable than for several weeks. Orders are confined to single machines from scattered sources. No activity is reported in the automotive field in Michigan and no business is in prospect from railroads in this territory. Sales during the week included a 48-in. x 12-ft. planer to a local manufacturer and a Pratt & Whitney 12-in. vertical shaper to the Mechanical Mold & Machine Co., Akron, Ohio.

The Brost Pattern Works, 1276 East Fifty-fifth Street, Cleveland, has purchased the plant formerly occupied by the Browning, Sommer & Adams Co., 1276 East Fifty-fifth Street. It is a one-story modern factory building containing 14,000 sq. ft. of floor space. The Brost company will move to the site as soon as alterations are completed.

The Canton Foundry & Machine Co., 600 Third Street, Canton, Ohio, is said to have plans under way for an addition to its foundry and machine shop to cost more than \$30,000 with equipment.

The Sheets Elevator Co., 6529 Broadway, Cleveland, has plans for a four-story and basement addition, 110 x 115 ft., to cost about \$135,000. G. S. Rider & Co., Century Building, are architects and engineers.

The Toledo Machine & Tool Co., 1426 Hastings Street, Toledo, Ohio, has awarded a general contract to H. J. Spleker & Co., Elm and Utica Streets, for a one-story addition to be used primarily for assembling.

W. A. Riddell, president Frederick Iron & Steel Co., Frederick, Md., and associates have organized the W. A. Riddell Co. The new organization has acquired the plants of the Hadfield-Penfield Steel Co., and its affiliated interest, the American Clay Machinery Co., Bucyrus, Ohio, with branch works at Willoughby, Ohio, recently sold under receivership, and the plant of the Era Steel Co., Mansfield, Ohio. The new owner will concentrate operations at Bucyrus, specializing in the production of clay-working, road-building and kindred heavy machinery, with branch for the manufacture of manganese steel castings. Mr. Rid-

dell will be president of the new company, and M. O. Garner, vice-president.

The Ohio Terminal Co., 2704 East Thirty-fourth Street, Cleveland, will soon begin the construction of an eight-story cold storage and refrigerating plant totaling 500,000 cu. ft., and reported to cost about \$450,000 with machinery. It will be operated by the Cuyahoga Cold Storage Co., understood to be an affiliated organization.

St. Louis

ST. LOUIS, July 25.

LOCAL representatives of manufacturers of machine tools report that the volume of business during the first six months of the year showed an increase over the same period in 1926. Several railroads issued large lists early in the year, and since then there has been a good volume of inquiries for one or more tools. Recent railroad purchases include: Missouri Pacific, two 90-in. Putnam heavy-duty driving wheel lathes; Missouri-Kansas-Texas, two Micro internal heavy-duty grinders; St. Louis, Southwestern, one Putnam 48-in. heavy-duty carwheel borer and one Micro internal heavy-duty grinder; Wabash, one Putnam heavy-duty axle lathe and two Monarch 18-in. lathes. The Kansas City Southern is in the market for an 18-in. lathe.

The erection of an airplane factory in St. Louis by the Robertson Aircraft Corporation, holder of the Chicago-St. Louis air mail contract, with which service Col. Charles A. Lindbergh was connected, has been announced by W. F. Robertson, president, who states that 1150 motors and a large stock of parts have been purchased from the Curtiss Aeroplane & Motor Co., Garden City, N. Y. According to Mr. Robertson this purchase is the largest strictly commercial aircraft motor deal ever made. These motors will have horse power sufficient to lift planes with seating capacity of two passengers and a pilot. Later on larger ships of the cabin type may be built, using one and three Wright Whirlwind motors, and designed for mail, express and passenger service.

Contract has been let by the Commercial Foundry Co., 7823 Alabama Street, St. Louis, to Stupp Brothers, Syndicate Trust Building, for a one-story foundry, 105 x 125 ft., to cost about \$35,000 with equipment.

The Union Electric Light & Power Co., St. Louis, is disposing of a bond issue of \$10,000,000, a portion of the proceeds to be used for expansion and betterments. The company is said to be arranging a program for extensions, etc., to cost more than \$5,000,000. Louis H. Egan is president.

The City Council, Clarksville, Ark., is said to be planning the construction of a municipal electric light and power plant.

The Hannibal Car Wheel & Foundry Co., Hannibal, Mo., has awarded a general contract to the Austin Co., Cleveland, for a new branch plant at Southport, La., consisting of main one-story foundry unit, 200 x 200 ft.; machine shop and pattern shop, 45 x 104 ft.; and two-story office, 38 x 40 ft., to cost close to \$200,000 with equipment.

The Firestone Tire & Rubber Co., Akron, Ohio, will soon begin work on a three-story and basement factory branch, storage and distributing plant, 60 x 120 ft., at St. Louis, to cost \$165,000. The construction will be carried out under the direction of Stone & Webster, Inc., Boston, engineer. Local offices of the Firestone company are at 3201 Locust Boulevard.

The Universal Automobile Service Co., 633 North Grand Avenue, St. Louis, has awarded a general contract to the Mid-Continent Construction Co., Louderman Building, for a six-story service, repair and garage building, to cost \$450,000 with equipment. Gill & Jackson, Buder Building, are architects. Charles R. Felton is president and general manager.

The Municipal Aviation Committee, Fort Smith, Ark., Leigh Kelley, chairman, has selected a site of 70 acres for a proposed airport, to include hangars, repair and reconditioning shops, and other buildings. It is planned to issue bonds for \$30,000 for the work.

The City Council, Boise City, Okla., is planning the erection of a municipal power plant and ice-manufacturing plant, with installation to include a 200-hp. Diesel engine and electric generator and 10-ton per day capacity ice-making equipment. It is estimated to cost about \$75,000.

The Empire Gas & Fuel Co., Kansas City, Mo., operated by the Cities Service Co., 60 Wall Street, New York, will begin the construction of a new pipe line, 20-in. diameter, from the Panhandle field in Texas to Wichita, Kan., for natural gas transmission, totaling about 250 miles, to cost

upward of \$10,000,000. A branch line is also proposed from Wichita to Ottawa, Kan.

The Blue Valley Structural Steel Co., Kansas City, Mo., is said to have concluded arrangements for the purchase of the local plant and business of the Goldberg & Sons Structural Steel Co., Independence Avenue, and will continue production at this location, specializing in the manufacture of structural and ornamental steel and iron products. A. R. Silverberg is general manager of the purchasing company.

The Torpedo Shell Mfg. Co., Inc., P. O. Box 712, Sand Springs, Okla., has been organized to succeed the Torpedo Shell & Sheet Metal Works, Tulsa, and will manufacture torpedo shells, specializing on a patented insulated type. The company's factory is now being moved from Tulsa to Sand Springs.

The Missouri district office of the Lincoln Electric Co., Cleveland, has been removed from the Railway Exchange Building, St. Louis, to 1003 Davidson Building, Kansas City. Robert Notvest is in charge, and will divide his time between the two cities.

Indiana

INDIANAPOLIS, July 25.

BIDS have been asked on a general contract by the Cleveland, Cincinnati, Chicago & St. Louis Railroad Co., Cincinnati, for its proposed engine house and locomotive repair shops at South Anderson, Ind., to cost close to \$200,000 with equipment. H. A. Baldwin, address noted, is chief engineer.

The Indianapolis Power & Light Co., Monument Circle, Indianapolis, has filed plans for a two-story and basement equipment storage and distributing plant, with repair department, 130 x 235 ft., to cost about \$90,000.

Bids on a general contract will soon be asked by the Board of Education, 150 North Meridian Street, Indianapolis, for its proposed technical high school, to cost \$450,000. Vonnegut, Bohn & Mueller, Indiana Trust Building, are architects.

The Summers Foundry Co., 1006 South Holmes Avenue, Indianapolis, has taken out a permit for a one-story foundry addition, 42 x 70 ft., for which general contract has been let to the Hunter Realty Co., 1639 Woodlawn Avenue.

The Universal Motor Corporation, Gary, Ind., care of L. Harry Warriner, 673 Broadway, architect, will soon begin superstructure for a three-story and basement service, repair and garage building, 25 x 125 ft., to cost in excess of \$120,000 with equipment.

The Henry Weis Mfg. Co., Elkhart, Ind., manufacturer of steel partitions, etc., has filed plans for extensions and improvements in its power house, to cost \$25,000 with equipment. Hubert Miller, Monger Building, is architect.

The State Line Generating Co., 72 West Adams Street, Chicago, Samuel Insull, president, has plans nearing completion for superstructure for its proposed steam-operated electric generating plant on the State line between Illinois and Indiana, near Hammond, Ind. The entire plant with equipment will cost close to \$10,000,000. Sargent & Lundy, address noted, are engineers.

Detroit

DETROIT, July 25.

BIDS have been asked on a general contract by the Richard Brothers Die Works, Inc., 1560 East Milwaukee Avenue, Detroit, for a one-story addition, to cost approximately \$22,000 with equipment. J. Lawson Miller, Goebel Building, is architect.

The Hayes-Ionia Body Co., Grand Rapids, Mich., manufacturer of automobile bodies, has negotiations under way for the purchase of the plant of the defunct Auto Body Co., Lansing, Mich., for which the Central Trust Co., Lansing, is acting as receiver. Upon acquisition, the company plans to take immediate possession. It is purposed to transfer the manufacture of bodies for the Overland Whippet automobiles to Lansing from the Grand Rapids works.

The Holland Furnace Co., Holland, Mich., is disposing of a stock issue to total about \$2,493,750, a portion of the fund to be used for general expansion and operations.

The Common Council, Traverse City, Mich., is considering the installation of a municipal steam-operated electric power plant for auxiliary service, to cost \$78,000 with equipment. Burd, Giffels & Hamilton, Grand Rapids, Mich., are engineers.

The Detroit City Service Co., Detroit, recently organized to take over the ice-manufacturing, cold storage and other plants of the Absopure Ice Co. Division of the General

Necessities Corporation, 2011 Park Avenue, totaling nine ice plants and 14 storage plants, is arranging for the early sale of a bond issue of \$3,000,000, a portion of the fund to provide for the acquisition and for proposed expansion. J. L. Dryden, treasurer and general manager of the Long Mfg. Co., 2768 East Grand Boulevard, manufacturer of cooling systems, etc., is president of the new organization; H. J. Redwood is vice-president, and George H. Klein, secretary and treasurer.

The Pontiac Pattern & Engineering Co., Sanford Street, Pontiac, Mich., is completing plans for a new one-story plant to cost about \$25,000 with equipment. Robert O. Derrick, Inc., Pontiac Commercial & Savings Bank Building, is architect.

The Fisher Body Co., General Motors Building, Detroit, will soon take bids for the erection of three one-story units at its plant at Pontiac, Mich., to cost more than \$250,000. The company will begin superstructure for a new power house at the plant, for which building contract recently was let to J. A. Utley, Penobscot Building, Detroit.

The Erb-Joyce Foundry Co., Vassar, Mich., has concluded arrangements for the purchase of the plant and property of the S. P. S. Foundry Co., St. Louis, Mich., and will take immediate possession. The new owner plans to discontinue operations for the time being at the St. Louis unit and will remove the equipment to its main plant at Vassar, where increased production will be developed.

The Board of Public Works, Lansing, Mich., is said to be considering the purchase of a water-softening plant, to cost about \$50,000, for the municipal water system. The city engineer will be in charge.

The Lake Shore Machinery Co., 1922-24 Peck Avenue, Muskegon, Mich., is building a two-story addition, 60 x 100 ft. It will be used as a gear plant and will also have a department for reconditioning used machinery. Most of the equipment has been purchased, except a heavy-duty lathe, 24-30 in. by 10 ft.

Pittsburgh

PITTSBURGH, July 25.

THE Board of Education, Woodlawn, Pa., will soon begin the erection of a one-story addition to the manual training shop at the Harding High School, to cost about \$30,000. Carlisle & Sharrer, Martin Building, Pittsburgh, are architects.

Vanleer Brothers, Brookville, Pa., are to rebuild the portion of their planing mills and wood-working plant destroyed by fire July 14, with loss close to \$100,000 with equipment.

The City Controller, City-County Building, Pittsburgh, is asking bids until Aug. 1 for wire fencing. Specifications at the office of the city architect, Northside Municipal Building, Ohio and Federal Streets.

The National Radiator Co., Central Avenue, Johnstown, Pa., is completing plans for a new one-story factory branch, storage and distributing plant at Garden City, N. Y., to cost more than \$30,000 with equipment. F. P. Jacobs is company engineer.

The West Penn Electric Co., West Penn Building, Pittsburgh, operating the West Penn Power Co., Monongahela West Penn Public Service Co., Potomac Edison Co., and other light and power utilities, has arranged for a preferred stock issue of \$4,000,000, a portion of the proceeds to be used for extensions and improvements in plants and system, including the acquisition of additional properties.

The Barnard Coal Co., Kingwood, W. Va., is considering the rebuilding of its tippie, recently destroyed by fire, with loss reported at close to \$40,000 including equipment.

The Ohio River Sand & Gravel Co., Pittsburgh, has been formed with a capital of \$1,500,000 to take over and expand the Ohio River Gravel Co., with principal plant at Parkersburg, W. Va. Extensions will be made. The new company is headed by Carroll C. Robertson, Oliver Building, and James H. Aupke, 1202 Woodlawn Avenue, both Pittsburgh.

The City Council, Parkersburg, W. Va., is said to be planning the installation of pumping equipment, power and other machinery in connection with proposed extensions and improvements in the municipal waterworks to cost \$400,000. Morris Knowles, Inc., Westinghouse Building, Pittsburgh, is engineer.

The L. A. Green Railway Equipment Co., First National Bank Building, Pittsburgh, is in the market for a 2000-kw., 3-phase, 60-cycle, 600 or 2300 volts turbine set. Curtis turbine with surface condenser and auxiliary preferred, steam pressure 130 lb.; also for a 2000 cu. ft. motor-driven air compressor, 100 lb. pressure, 3 phase, 60 cycle, 2300 volts.

The Acme Stamping & Mfg. Co., 201 Corliss Street, Pittsburgh, is inquiring for a used open-back gap press, capacity 100 to 125-ton pressure, similar to Bliss No. 74½ or 75½.

Gulf States

BIRMINGHAM, July 25.

WORK has been started by the Dillon Machine Shop, Ferriday, La., on a new one-story machine shop, 50 x 70 ft., for which equipment will soon be purchased.

The Chamber of Commerce, Colorado, Tex., J. H. Greene, secretary, has secured a tract of land for a municipal airport, and will soon begin construction, the work to include hangars, repair shop and other structures.

The Laurel Ice & Packing Co., Laurel, Miss., has plans under way for a new one-story ice-manufacturing plant, to cost approximately \$50,000 with equipment.

The Goad Motor Co., Augusta and Navarro Streets, San Antonio, Tex., has plans for a two-story service, repair and garage building, 165 x 167 ft., to cost about \$110,000 with equipment. Harvey P. Smith, National Bank of Commerce Building, is architect.

The Texas Laundry Machinery Co., 119 Blue Star Street, San Antonio, Tex., manufacturer of laundry machinery and parts, is reported to be planning the early erection of a new plant, to cost more than \$25,000 with equipment. The company has recently sold its present building to the Plastic Products Co., and purposes to remove equipment to the new site. The Plastic Products Co. will remodel the acquired property. Plans are also under advisement for a two-story addition to cost about \$21,000.

The Ripley Light & Power Co., Ripley, Miss., is considering extensions and improvements in power plant and system, including the installation of additional equipment. Oscar Street is general manager.

The New York Buyers' Association, Blue Star Street, San Antonio, Tex., has completed plans for a one and two-story cold storage and refrigerating plant, 60 x 450 ft., to cost approximately \$120,000 with equipment.

The City Council, Albuquerque, N. M., contemplates the installation of pumping machinery, power and other equipment in connection with proposed extensions and improvements in the municipal waterworks, for which a bond issue of \$250,000 is being arranged. Robert L. Cooper is city engineer.

The Borderland Utilities Co., Fort Stockton, Tex., is planning the purchase of an electric generating unit, about 120-hp. capacity.

The Southern Machinery & Supply Co., Montgomery, Ala., has inquiries out for a stump-puller, with cable, etc.

The Gulf States Utilities Co., Beaumont, Tex., is completing plans for an addition to its steam-operated electric generating plant on the Neches River, to increase the capacity 40,000 kw. The project will also include the construction of a new transmission line from Dayton to Cleveland and Conroe, Tex., to operate at 60,000 volts. The entire project will cost upward of \$3,000,000. The company completed the first unit of the Neches River generating station last fall, and plans call for an ultimate plant of five operating units, each to cost \$3,000,000 or more. The company is operated by the Engineers' Public Service Co., a subsidiary of Stone & Webster, Inc., Boston.

The City Commission, Leesburg, Fla., has authorized extensions and improvements in the municipal ice and cold storage plant, including the installation of additional equipment, to cost approximately \$50,000. D. E. Bivins is city manager.

The Louisiana State Board of Health, Baton Rouge, is planning the early establishment of a factory at Monroe, La., for the manufacture of wire screens. It will be in charge of A. H. Fletcher, a member of the Board of Health staff.

Thomas J. Locke, Columbus, Miss., has plans for a new cold storage and refrigerating plant, 50 x 55 ft., to cost about \$35,000 with equipment.

Pacific Coast

SAN FRANCISCO, July 20.

THE United States Spring Co., Inc., and the United States Rubber Co., Inc., Los Angeles, have awarded a joint contract to William P. Neil, Inc., 4814 Loma Vista Avenue, for a new one-story plant, 120 x 417 ft., to be occupied by both interests, to cost \$100,000 with equipment.

Arthur Tregenza, Salinas, Cal., has completed plans for a new one-story plant for the manufacture of automobile bodies.

The National Paper Products Co., Church Street, Stockton, Cal., has awarded a general contract to Barrett & Hill, 918 Harrison Street, San Francisco, for two one-story additions, 80 x 250 ft., and 60 x 100 ft., to cost approximately \$150,000. V. D. Simons, 435 North Michigan Boulevard, Chicago, is consulting engineer.

The Price-Pfister Brass Mfg. Co., 2922 Humboldt Street,

Los Angeles, will soon begin the erection of a one-story machine shop to cost about \$21,000 with equipment.

The Inland Crystal Salt Co., Salt Lake City, Utah, is considering rebuilding the portion of its plant, near the Great Salt Lake, destroyed by fire July 15, with loss of more than \$200,000 including equipment.

The City Council, Eugene, Ore., is completing plans for the early construction of the first unit of a new municipal hydroelectric power plant on the McKenzie River, to have an output of 16,000 hp. Two additional units will be installed following the completion of the first plant, making a total capacity of 75,000 hp. Citizens have approved bonds for \$1,250,000 for the project, including transmission lines.

The Brown Ice Cream Co., Ogden, Utah, plans the installation of an ice-manufacturing plant in connection with a new factory at Pocatello, Idaho. The entire project will cost close to \$100,000 with equipment.

The Board of Education, Chamber of Commerce Building, Los Angeles, will soon begin the erection of a one-story addition to the vocational shop at the James A. Garfield High School, Eagle Street and Woods Avenue.

Maggio Brothers, El Centro, Cal., have plans for a new cold storage and refrigerating plant to cost close to \$40,000 with equipment. Donald Wells, El Centro, is architect.

Charles Jones & Co., 106 Rust Building, Tacoma, Wash., will build a plant, 60 x 300 ft., to cost \$200,000, on the tide-flats of Tacoma, according to an announcement of the company.

The Ornamental Iron & Stove Works, 503 East Main Street, Portland, Ore., is contemplating an addition to its foundry, and has purchased adjoining property, 100 x 100 ft. The new building will be used for shop work and storage.

Canada

TORONTO, July 25.

MACHINE tool builders and dealers report a good demand for their various lines. An Ontario manufacturer of flour milling machinery has secured the largest individual order in its history for machinery to be shipped to western Canada. This order alone will keep the company's works running to capacity for the remainder of the year. Agricultural implement makers are busy and are preparing to ship several carloads of farm machinery to the West during the week. Local dealers report a strong demand for tools for mining operations, and the automotive industry is also furnishing a steady call for single machines.

Bids will be called in September by the Town Council, Bromptonville, Que., for the construction of waterworks and sewage plants and systems to cost \$167,000. Armand Crepeau, 30-A Wellington Street North, Sherbrooke, Que., is engineer.

The Hollingshead Mfg. Co., Bowmanville, Ont., is planning a \$10,000 addition to its factory.

The Canadian Goodrich Co., Kitchener, Ont., contemplates an addition to its factory.

The Felston Products Co., Toronto, has purchased a site at Scarborough Bluffs, Ont., and proposes to start work at once on the erection of a factory.

Tenders have been received for a one-story addition to the body plant of building No. 55 of the General Motors Corporation of Canada, Ltd., Oshawa, Ont.

The Eastern Steel Products, Ltd., has taken over and will operate the plants of the Metal Shingle & Siding, Ltd., at Preston, Toronto and Montreal. There will be no change in management, and Cyrus Dolph, who organized the Metal Shingle & Siding Co., will continue as president of the new company. A. K. Cameron is vice-president and general manager. J. G. Lorrimer will be manager of the Preston plant, and W. S. Cameron will be in charge at Toronto.

Western Canada

The construction of a new plant for the Dominion Bridge Co., at Vancouver, B. C., is well under way. The buildings will cost \$35,000 and equipment about \$100,000. In addition to work shops, stock rooms and office building, a wharf will also be erected.

The Town Council, Lloydminster, Sask., will build an electric light plant to cost \$40,000.

The town of Moosomin, Sask., is having plans prepared for the erection of an electric light plant at a cost of \$40,000.

Plans are under way for a \$40,000 electric plant at Indian Head, Sask.

J. Coughlan & Son, Vancouver, B. C., propose to build an addition to their steel fabricating plant and have started filling in eight acres of land east of the shipbuilding plant.

Complete expansion is not expected immediately, but it is understood that the entire eight acres will be covered with buildings within the next year and a half. Owing to the falling off in the shipbuilding industry on the Pacific Coast the company has discontinued shipbuilding for the present.

Foreign

BIDS are being asked by the General State Railway Administration of the Argentine Republic, Buenos Aires, until Sept. 15, for the construction of three new railroad lines, including stations, warehouses, electrical apparatus, mechanical equipment, etc. The longest line will be from Formosa to Embarcacion, 255 miles, estimated to cost \$7,053,578. Another line is to be constructed from Metan to Barranqueras, 225 miles, estimated to cost \$4,800,000. The third line will run from Cordoba to La Puerta, 75 miles, to cost about \$1,794,293.

The Lago Oil & Transport Co., Ltd., 120 Broadway, New York, is reported to be considering the construction of a new pipe line in the Lake Maracaibo district, Venezuela, to extend from the lake shore northward to a point beyond the entrance to the lake.

The Lower Austrian Hydro-Electric Co., Vienna, Austria, has plans under way for transmission line construction to connect its system with the power lines of electric companies operating in Upper Austria and Styria. Power substations for interconnection and other facilities will be installed.

Giulianotti y Martinez, La Quiaca, Argentina, desire catalogs of equipment for smelting lead ore and casting articles made of this metal.

Industrial Finances

The Trumbull Steel Co., Warren, Ohio, earned net profits of \$37,832, after all charges, in the quarter ended June 30, comparing with \$299,695 in the preceding three months and with \$522,602 in the second quarter of 1926.

The Republic Iron & Steel Co., Youngstown, for the quarter ended June 30, reports net profits of \$988,115, after all charges and preferred dividend requirements, equivalent to \$1.83 a share on the 300,000 shares of common stock. In the preceding quarter the company earned \$1,044,421 or \$2.02 a share, and in the second quarter of 1926, \$1,121,436 or \$2.28 a share. Net profits for the first half of this year, totaling \$2,032,536, compare with \$2,443,282 in the corresponding period of 1926. Unfilled orders for finished and semi-finished products, as of June 30, 1927, totaled 113,926 tons, compared with 165,391 tons on March 30 and with 122,944 tons on June 30, 1926.

The Vanadium Corporation of America, New York, had net income of \$1,113,546, equal to \$2.94 a share on the common stock, in the six months ended June 30. This compares with \$1,043,154 or \$2.76 a share on the common stock outstanding in the corresponding period last year.

The Central Alloy Steel Corporation, Massillon, Ohio, in the quarter ended June 30, earned \$1,224,670, equivalent after Federal taxes and preferred dividend requirements to \$1c. a share on the 1,320,625 shares of common stock. In the preceding quarter the company earned \$592,442 or 31c. a share.

The American Locomotive Co.'s net earnings for the six months ended June 30 amounted to \$2,485,784, equivalent after preferred dividends to \$1.48 a share on the common stock. In the corresponding period last year the company earned \$3,338,289 or \$3.10 a share.

First half operations of the Transue & Williams Steel Forging Corporation, Cleveland, resulted in a net loss of \$87,595, after taxes and other expenses. This compares with a loss of \$26,440 in the first six months of 1926. Net loss for the quarter ended June 30 was \$388, as against a loss of \$87,207 in the preceding quarter and a loss of \$34,769 in the second quarter of 1926.

The Virginia Iron, Coal & Coke Co., Roanoke, Va., reports a net loss for the six months ended June 30 of \$137,337, after allowing \$120,618 for depreciation and depletion. Net loss in the first half of 1926 was \$49,633. In the quarter just ended loss amounted to \$74,897 as against \$39,616 in the second quarter last year.

The Otis Steel Co., Cleveland, for the quarter ended June 30, reports net earnings of \$683,482 after general expenses but before depreciation and Federal taxes. This compared with \$524,996 in the second quarter of 1926. Profit for the first six months of 1927 amounted to \$1,434,618, before depreciation and Federal taxes, as against \$1,413,640 in the first half of last year.

Report of the M. A. Hanna Co., Cleveland, and subsidiaries,

for the quarter ended June 30, shows net income of \$325,125 after interest depreciation, depletion and Federal taxes, equivalent, after allowing for dividends on the 7 per cent and 8 per cent preferred stock, to 23c. a share on the 291,844 shares of common stock. In the preceding quarter the company earned \$33,749.

The General Electric Co., Schenectady, N. Y., in the six months ended June 30, earned \$22,542,973, after all charges and cash dividends on special stock, equivalent to \$3.13 a share on common stock outstanding. In the corresponding period last year the company's profits totaled \$19,000,393 or \$2.63 a share. Net sales billed in the first half of 1927 amounted to \$149,795,027, as against \$147,450,868 in the six months ended June 30, 1926.

The Chicago Pneumatic Tool Co., New York, in the quarter ending June 30, earned net profits of \$220,274, equivalent to \$2.31 a share on the capital stock, and compared with \$248,141 or \$2.35 a share in the corresponding quarter of 1926. Net earnings in the first half of this year amounted to \$430,552, as against \$447,287 for the first half of 1926.

The Donner Steel Co., Inc., Buffalo, reports net income of \$161,472 in the three months ended June 30, comparing with \$203,141 in the second quarter of last year. First half earnings this year were \$229,733, as against \$445,177 in the first six months of 1926.

Second quarter earnings of the General Fireproofing Co., Youngstown, after depreciation and preferred dividends but before Federal taxes, were \$306,636, an increase over the \$295,609 earned in the same period last year. In the six months ended June 30, 1927, profits aggregated \$505,170, and in the first half of 1926, \$495,496.

The Harbison-Walker Refractories Co., Pittsburgh, earned net profits of \$1,012,000, or \$2.69 per share of common stock in the second quarter of 1927, compared with \$947,000 or \$2.51 a share in the corresponding period last year.

The Otis Elevator Co., New York, had net profits in the quarter ended June 30 of \$1,273,772, as against \$1,319,817 in the second quarter of 1926.

The Wickwire Spencer Steel Co., Inc., in the six months ended June 30, reports a net loss of \$302,336, after bond interest and all fixed charges, but before depreciation. Net loss during the corresponding period last year was \$86,760.

The L. S. Starrett Co., Athol, Mass., maker of mechanics' tools, steel tapers and hack-saw blades, in 1926 earned \$30.12 a share on its 20,000 common shares after dividends of 6 per cent on the preferred stock. In 1925 the company earned \$17.11 a share on common stock. Recently it has been paying dividends on the common stock of \$16 per annum, that rate having been increased in 1925 from \$12.

George F. Coffin has been appointed referee in bankruptcy by the United States District Court for the Kuebler Foundries, Inc., West Easton, Pa., manufacturer of malleable and other iron castings. The company's plant was formerly used by the Sterlingworth Railway Supply Co. The Kuebler company has filed an insolvency petition reporting liabilities of \$417,254 and assets of \$309,165.

The plant and property of the Coplan Steel Corporation, Ogdensburg, N. Y., are being listed for public sale by the town supervisor on account of unpaid taxes. The works were formerly operated as a branch of the Coplan Co., Ltd., Hull, Quebec.

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